

THE ROLE OF POSTDOCTORAL FELLOWSHIPS IN ACADEMIC MEDICINE



BY

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AND

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A REPORT ON A SURVEY OF NATIONAL FELLOWSHIP PROGRAMS IN THE MEDICAL SCIENCES

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Role of the Postdoctoral Fellowship in Academic Medicine

ARTHUR S. CAIN, JR., M.D., and LOIS G. BOWEN, M.A.

*A Report on
A Survey of Postdoctoral Fellowships
in the Medical Sciences*

Carried out Under the Guidance of the
MEDICAL FELLOWSHIP BOARD
DIVISION OF MEDICAL SCIENCES
NATIONAL ACADEMY OF SCIENCES — NATIONAL RESEARCH COUNCIL



1961

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Foreword

In this century there have been two periods of national ferment in the affairs of academic medicine. The first came from the professional recognition of an inadequacy, the second from the social recognition of an opportunity.

The professional inadequacy was laid bare by the Flexner Report in 1910 and led to sweeping reforms of the medical schools of the country guided by a new professional recognition of the role of research in the progress of medicine and in the elevation of the standards of medical education.

The social enlightenment came some thirty years later when the mobilization of the fruits of medical research to serve the national needs in the second World War finally established in the public consciousness the fact that research was now offering medicine power not merely to give comfort and palliation but to control disease and to restore the sick to health. Society promptly moved in and began to promote medical research as an instrument of national policy.

Each of these revolutions made demands for profound changes in methods of recruitment and training of professional personnel. The first affected the academic community only, requiring of both students and faculties a broader foundation of intellectual and scientific experience. The more recent revolution has been on a much broader front since it called for mass recruitment of trained personnel for a new profession dedicated primarily to medical research.

To cope with each of these two situations the device of offering awards of postdoctoral fellowships to selected individuals has been freely used. The Division of Medical Sciences of the National Research Council, stimulated by the Rockefeller Foundation, pioneered in this field. From 1922 until the second World War, it conducted the only program of awards of postdoctoral fellowships in medical science that were offered in national competition. By current standards it was, however, a program very modest in size designed to identify and support the training of a small elite who might become the future leaders of academic medicine.

The entrance of government and of the voluntary health agencies into the field shortly after the end of the war and the enormous expansion in the number of available fellowships that followed, is familiar to all. As this report indicates, close to 1,000 awards were made in the year 1956-1957, whereas in a period of twenty years between the two wars, the National Research Council granted only some 430 fellowships in the medical sciences.

This social pressure to professionalize medical research, reflected in the expansion of the fellowship population and, more potently, in the huge national programs of grants-in-aid, has been a matter of deep concern to the leaders of academic medicine. The traditionalists have feared for the integrity of the historical patterns of medicine and its academic institutions. Teachers have questioned its impact on medical education. The innovators, on the other hand, recognized the dangers of rapid expansion but welcomed the increased opportunity for medical progress and optimistically held that the situation was under control and that a stable pattern will emerge.

Clearly the stage was set for a deliberate analysis of the situation. The Division outlined such a study in 1956 and found an interested and sympathetic sponsor in the John and Mary R. Markle Foundation. The survey was launched in 1957, ably designed and directed by Dr. Arthur S. Cain under the guidance of the Medical Fellowship Board of the Division. The chairman of the latter, at that time, was the late Dr. Sam Clark. He brought to the project a dedicated enthusiasm and a degree of critical intuition that infected all members of the Board, each of whom contributed from his rich individual experience to the conduct of the study and the evaluation of the data.

The Division is indebted to many other consultants and organizations for support and encouragement. Notable amongst these were the late Dr. Edward Turner, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, and Dr. Ward Darley, Executive Director of the Association of American Medical Colleges. The support of these two authoritative organizations has been a source of real encouragement to the Division. Completion of the study was aided by a supplemental grant from the National Institutes of Health in 1958. Finally, acknowledgment should be made of the unstinted cooperation of the officers of the many fellowship-granting agencies from whom information was sought, and of the superintendents of the teaching hospitals who distributed questionnaires to their interns and residents.

Some preliminary reports on the study were published in 1958 and 1959. Then the project suffered a series of grievous rebuffs which seriously impeded progress and have delayed completion of the work and the final report by some 18 months. In 1960 came the severe illness and untimely death of Dr. Clark. In the same period, Dr. Cain became the victim of serious and protracted disabilities of vision. Reluctantly, he was finally compelled to relinquish the task of preparing the final report to Mrs. Lois Bowen who has served the Division for many years as executive secretary of the Board. The Division is deeply indebted to her for the completion of a formidable task with resolution and fine judgment and to the members of the Board for their willing response to all requests for advice. Particular acknowledgment is made of the zealous leadership of Dr. Cecil Watson who accepted the chairmanship of the Board following the death of Dr. Clark.

The national system of fellowships changes year by year. Consequently, the quantitative data contained in this report do not faithfully reflect the contemporary scene, although qualitatively they remain significant. The study does, however, represent a temporal cross section of fact and opinion, and the body of opinion collected in 1957-1958 is probably quite valid today.

The report is deliberately written in minor key. There has been no attempt to frame specific recommendations for the guidance of the policies of those who administer fellowship programs. On the other hand, a number of generalizations have been made and conclusions drawn. Many of these will merely confirm and give substantive support to the subjective impressions of informed readers. A few conclusions may be surprising and, therefore, should encourage further enquiry.

One reason why the Division initially undertook the survey was to clarify its own purposes and the role that it might still decide to play in the field of

fellowships. A good argument could be made for the view that the Division had blazed the trail for twenty years and had set the patterns which others were now expanding and elaborating. Its mission was accomplished and it could gracefully retire from the scene. This has not been the view of the majority of the members of the Medical Fellowship Board. The report clearly demonstrates that the majority of young medical scientists, whether clinically trained or not, seek a career embracing the rounded responsibilities of an academic position rather than one dedicated to research alone. Impressed by this, and other evidence in the report, the Board feels that there is still need for a small program designed, as were the early NRC fellowships, to identify and encourage potential leaders of academic medicine and to counsel closely with these chosen few in developing highly individualized fellowship experiences. This kind of intellectual apprenticeship is not possible in the large impersonal, nationally administered programs. In 1959, the Board launched a small pilot program along these lines and has published a brief description of it (*J.A.M.A.*, 171:1555-1557, November 14, 1959). The Board is planning a more detailed critique of this experiment in the near future.

One disturbing by-product of the study has been the evidence that students, particularly interns and residents, are ill-informed and poorly advised on the opportunities available to them for the advancement of their mastery of the medical sciences. This, surely, is a situation that medical educators and administrators should seek to correct.

Because of the long delay in completing this report the Division, at one time, considered giving it only limited circulation. Persuaded, however, by the Board and by the officers of the Association of American Medical Colleges, the decision was made to offer it to a larger audience, and so it now appears as a Supplement to the *Journal of Medical Education*.

Should the substance of the report be found to be helpful in formulating policies for the future, it may well be that steps should be taken to keep the more ephemeral information in the report up to date. Indeed, there does seem to be a need for a clearing house not only of statistical but also of personal information on fellows, past and present. If dossiers of these were available and contained evidence of competence, experience, and career interests, these might be of great assistance to schools and institutions seeking new men and women for their faculties.

This Foreword has expressed the indebtedness of the Division to the many individuals who have cooperated in the work of the survey. One final acknowledgment remains. Without the magnificent response of the thousands of correspondents to the request for personal information and opinion, this study would have failed and there would have been no body of data on which to write a report.

R. Keith Cannan
Chairman
Division of Medical Sciences

July 21, 1961

Acknowledgment

With this report the Medical Fellowship Board of the National Research Council continues its forty-year reputation for substantive contributions to the quality of medical education. The force of the Board's contributions, which have been both philosophical and practical, has long influenced the scientific foundations of teachers and investigators preparing for careers on the graduate and medical faculties of this nation's universities.

To Dr. R. Keith Cannan, Chairman of the Division of Medical Sciences of the National Research Council, whose perception and fine timing set the parameters of the survey, to the late Dr. Sam L. Clark, dedicated teacher, respected scientist and Chairman of the Medical Fellowship Board during the survey, to Dr. C. J. Watson, his successor, to the Board itself, and to the authors, the Association of American Medical Colleges expresses its appreciation for the privilege of publishing this most interesting, stimulating and important study.

Ward Darley, M.D.
Executive Director
Association of American Medical Colleges

ROLE OF THE POSTDOCTORAL FELLOWSHIP IN ACADEMIC MEDICINE

(A Report on a Survey of National Fellowship Programs in the Medical Sciences)

SUMMARY

I. THE PROBLEM

A. Background

The interest of the Division of Medical Sciences of the National Academy of Sciences—National Research Council in postdoctoral medical fellowships spans the four decades since the organization of the Division just after World War I. Always this interest has focused upon the fellowship as a mechanism for meeting the needs of the medical schools for faculty personnel.

The first step taken by the Division was a survey of the personnel needs of the preclinical departments of the medical schools in 1920.¹ As the result of the interest of the Rockefeller Foundation in the findings, the Division appointed its Medical Fellowship Board in 1922 and joined forces with the Foundation to establish a postdoctoral fellowship program. The aim was to identify men with unusual potential and offer them training designed to prepare them to meet the demands of academic life. After a five-year period of experimentation, the Board decided in 1927 that full-time experience in research provided the best preparation for an academic career in medicine. The resulting program of NRC Fellowships in the Medical Sciences was directed by the Medical Fellowship Board with the financial support of the Rockefeller Foundation for nearly forty years. During the 1920's and 1930's, these were the only postdoctoral fellowships awarded in national competition that were oriented specifically to the medical sciences.

In 1941, the Board inaugurated the first long-term senior fellowships in the medical sciences—the Welch Fellowships in Internal Medicine. Again the leadership of the Rockefeller Foundation was in evidence. The concept of the Welch Fellowships was first advanced by Alan Gregg, then the Foundation's Director for the Medical Sciences, and the funds for this program were provided by the Foundation.

After World War II, many agencies, both public and private, entered the fellowship field. Their programs for the most part were patterned after the fellowships offered by the Medical Fellowship Board, at both the junior and senior levels. A few, like the Markle Foundation, developed their awards in close association with the medical schools. However, a majority of the new programs had as a primary objective the recruitment of personnel for research. By the early 1950's, the small prewar program designed to provide personnel for medical faculties had been replaced by a device for mass recruitment of personnel for medical research. No one would challenge the worthiness of this goal. Yet the transition came at a time when unfilled vacancies on our medical school staffs were causing increasing concern.

¹ Investigation of conditions in the departments of preclinical sciences, J.A.M.A. 74:1117-1122, April 17, 1920.

There were those who feared that this new use of the fellowship might create problems that could impede the progress of medical education. Would promising scientists be diverted into full-time research and thus away from academic careers? Would we create a corps of "professional fellows," who moved from one form of fellowship support to another, deferring academic service indefinitely? These and other insistent questions pointed to the need for objective information on the national fellowship situation. To aid the Division in its own future planning, and in the hope that the findings would be of interest to other fellowship-granting agencies, the Chairman of the Division of Medical Sciences proposed the present survey in 1956. The John and Mary R. Markle Foundation generously provided funds for support of the study, which was carried out under the guidance of the Medical Fellowship Board.

B. Objectives

The objectives of the survey were:

1. To describe the present system of postdoctoral fellowships in the medical sciences as awarded in national competition. This involved a study of the supply and demand for fellowships, and of the recent growth in the number of fellowships available. It encompassed also a study of the characteristics of those who have held fellowships in the medical sciences and the nature of the fellowship experience afforded them.

2. To evaluate the impact of this fellowship system (a) upon the recipients themselves, past, present and prospective, and (b) upon the institutions of academic medicine. The latter objective, a primary one in terms of the Board's own interests, was divided into two phases. The present impact of fellowships on medical education was assessed by studying the contributions of past and active fellows in terms of the academic responsibilities they were carrying. The potential contribution of fellowships to academic medicine was, of course, more difficult to evaluate. The career choices and attitudes of fellowship alumni who had not entered academic careers, of active fellows, and of young physicians still in clinical training provided some interesting and thought-provoking clues to the impact on academic affairs of the expanding programs of fellowships.

II. THE APPROACH

A. Definitions and Limitations

For the purpose of this study, a postdoctoral fellow was defined as one who holds the M.D., Ph.D., or comparable doctorate, and who receives financial support in national competition which permits him to devote full time to developing his capabilities in medical investigation in accordance with his own conception of his needs. Under this definition, clinical fellows and trainees were excluded from study, even though they may have had opportunity for part-time research experience. Persons working as assistants under research grants were similarly excluded, although it is recognized that their experience in some instances may be similar to that of the research fellows.

The "junior fellowship" was defined as a postdoctoral award made within a few years after the candidate has received a doctorate, usually for a term of one or two years. A "senior fellowship" is an award made at a later stage in the fellow's career, usually to one who has had the advantage of experience comparable to a junior fellowship. The senior category includes long-term awards

such as the Scholar Grants of the Markle Foundation as well as one- or two-year awards for sabbatical study or similar purposes.

Fellowship programs designed primarily to effect exchange of personnel between the United States and other countries were excluded. Short-term (less than six months) and part-time research fellowships also were defined as outside the scope of the study.

B. Groups Studied

The following samples were selected for study:

1. The Fellows Themselves

Questionnaires were mailed late in 1957 to almost 4,000 men and women who had held or were currently holding postdoctoral fellowships in the medical sciences from the twenty-two national fellowship-granting agencies that cooperated in the study. Eighty-seven per cent, or 3,461 past and active fellows, replied. Of these, 463 were active junior fellows, and 289 were active senior fellows. The remaining 2,709 had held fellowships during the years 1939-1940 and 1946-1957.

The twenty-two cooperating agencies were the major organizations that granted fellowships in the medical sciences during this period, including governmental agencies, private philanthropic foundations, and the voluntary health agencies. Without the cooperation of these agencies in supplying lists of their fellows and information concerning their programs, the survey could not have been effectively pursued.

2. Fellowship Applicants

With the cooperation of the same twenty-two fellowship-granting agencies, the files of the 1,307 men and women who applied for postdoctoral research fellowships in the medical sciences for the year 1956-1957 were studied. Questionnaires were not sent to this group, but data were abstracted from their application forms.

3. Interns and Residents in the Primary Teaching Hospitals

A questionnaire was distributed in November, 1957, to the interns, residents and clinical trainees in the teaching hospitals affiliated with all accredited medical schools in the United States. It is estimated that approximately 9,500 house officers received the questionnaire. Responses were received from almost 7,400 people (approximately 78%). Foreign graduates who did not intend to remain in the United States were eliminated, and a 50% sample of the remaining responses was analyzed (3,269 questionnaires).

4. Full-Time Faculty Members in the Medical Schools

The final step in the survey was a study of the full-time staffs of the medical schools. A preliminary questionnaire was sent in 1957 to the heads of eleven departments in all of the medical schools of this country. About 84% of these departmental chairmen replied. They were asked to provide the names of their full-time faculty. Using the names thus obtained as a mailing list, the Board sent a more extensive questionnaire in 1958 to the full-time faculty members listed. Of the approximately 3,700 persons to whom the second questionnaire was distributed, nearly 2,800 (74%) replied. This sample is not

regarded as a complete cross-section of medical school faculty members, since only two of the clinical departments, medicine and surgery, were included.

C. *Information Gathered*

Reference
to Tables

The following data were secured from the four major groups studied:

1. *Past and Active Fellows:*
 - a. Their scientific backgrounds—the training and previous experience they brought to the fellowship. 27, 29-30, 33
 - b. The nature of their fellowship activities. 34-36
 - c. Their evaluation of the fellowship experience. 42-45
 - d. Their present positions as a key to their current contributions to academic medicine. 37-41
 - e. Their ultimate career interests, and the conditions under which they would enter academic life. 46-57
 - f. The additional training they desired in preparation for these careers. 58-59
2. *Fellowship Applicants for 1956-1957:*
 - a. Their scientific backgrounds. 2, 4-5, 8-9, 12
 - b. The nature of the fellowship experience they sought. 4, 12-19
 - c. Their ultimate career interests. 10-12, 14, 16, 20
 - d. The fate of the applications, permitting comparison of applicants and fellows on the above points. 1-2, 5-10, 17-20
3. *Interns and Residents:*
 - a. Their scientific backgrounds and present status in clinical training. 61-67, 75, 81-83
 - b. Their career interests. 68-89
 - c. The further training they desired in preparation for their chosen careers. 84-89
 - d. Their evaluation of research fellowships, traineeships, and other mechanisms for obtaining this training. 88-92
4. *Full-time Faculty Members:*
 - a. Their scientific backgrounds, including fellowship experience. 93-96, 112-113
 - b. Their present positions, academic responsibilities, the division of their time among these responsibilities, and the sources of their salaries. 97-106
 - c. Their views on the balance between teaching and research in their own positions and in their departments as a whole. 107-111
 - d. Their role in the fellowship system, as past and active fellows, and as supervisors of fellows. 112-120
 - e. The views of department heads on problems related to the recruitment of academic personnel. 121-122

III. RESULTS

Table

A. Description of the Fellowship System

1. Supply and Demand

a. The Supply of Fellowships

Almost 4,000 persons had held 4,500 fellowships in the medical sciences at the postdoctoral level during the thirteen-year period studied. These 4,000 fellows had served an estimated 7,300 fellowship years.

22

Governmental agencies had provided support for more than half of the fellows in our thirteen-year sample. The remainder were supported in approximately equal numbers by the voluntary health agencies and by private philanthropic foundations. In the support of senior or advanced fellowships, however, private philanthropy was more active than the other two groups.

21

b. Trend of Growth

Over the twelve-year period* 1946 to 1958, there was a ten-fold increase in the number of active fellows under the national agencies studied. The supply of fellowships increased from less than 100 per year in 1946-1947 to more than a thousand annually in 1956-1957.

22

c. Supply in Relation to Demand

For the 1956-1957 fellowship year, 1,307 candidates applied for fellowships under one or more of the cooperating agencies. Nine hundred and forty-two, or 72%, were offered awards; 862 or 66% accepted the fellowships granted them. These over-all figures include renewal applications. Considering only new requests, 55% of junior applicants received and accepted awards, compared with about 60% at the senior level.

1, 2

2. Characteristics of Applicants and Fellows

a. Degrees

Fifty-four per cent of the applicants in 1956-1957 held the M.D. degree, almost 50% the Ph.D. or Sc.D., and 3% held both degrees. In our thirteen-year fellowship sample, nearly two-thirds held the M.D. degree, only about 40% the Ph.D. or Sc.D., and 6% held both degrees. This apparent discrepancy resulted from the shift in the balance between physicians and Ph.D.'s that occurred during the period under study. Of those who began their fellowships in 1951 or earlier, about three-quarters held the M.D. degree, whereas about 56% of those who began their fellowships after 1951 were physicians. In our sample of full-time medical school faculty members, the M.D.'s had held more fellowships, and for longer periods, than had the Ph.D.'s.

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In the selection process, M.D.'s were slightly favored over Ph.D.'s in the competition for junior awards; at the senior level Ph.D.'s received a slight preference.

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* The single prewar year studied (1939-1940) is disregarded here.

Table

<i>b. Sex</i>	
Women constituted 10% of the sample of 1956-1957 applicants and less than 10% of all past and active fellows. There is no clear evidence that the reviewing boards discriminated against women, although it would appear that women candidates at the junior level who held the M.D. degree found it a little more difficult than the average candidate to secure a fellowship.	6 28 6
<i>c. Clinical Training</i>	
Nearly all the fellows who held the M.D. degree had served internships. The majority (87%) had had some residency training. Nearly as many (81%) were board-certified or planned to seek certification.	29
<i>d. Previous Academic Experience</i>	
Twenty per cent of the 1956-1957 candidates were holding full-time or part-time academic posts at the time they applied. Among active fellows for 1957-1958, one-fourth of the junior fellows and 80% of the senior fellows had held academic posts at some time in their careers prior to the fellowship appointment. Two-thirds of the latter had served at the level of assistant professor or higher before they became fellows.	5 33
<i>e. Age</i>	
The median age of candidates for junior fellowships in 1956-1957 was approximately 31 and for senior fellowships about 34. The M.D.'s who applied at the junior level were a little older than the Ph.D.'s but the physicians among senior candidates tended to be a little younger than those holding other doctorates.	7
<i>f. Fields of Interest</i>	
Two fields contributed more than a proportionate share of applicants and fellows. Half of all the past and active fellows who were physicians had had residency training in internal medicine or one of its specialties. Among the 1956-1957 applicants, about 40% of the M.D.'s planned to make their ultimate careers in internal medicine; among Ph.D.'s, biochemists constituted almost the same proportion of candidates. This keen interest on the part of internists and biochemists in fellowship training was borne out by the findings in all phases of the survey.	30 11
<i>3. Nature of the Fellowship Experience</i>	
<i>a. Supervision</i>	
In clinical departments, 34% of our faculty sample (366 supervisors) had under their guidance 760 fellows. In the preclinical departments, 395 faculty members (23%) were guiding 650 fellows. M.D.'s more often had fellows under their supervision than did Ph.D.'s; faculty members with both the M.D. and Ph.D. degree were even more heavily involved.	103

Table

Senior faculty members—professors and departmental chairmen—were most in demand to provide supervision of fellowship activities. In the clinical departments, 50% of all professors and chairmen had fellows working under their guidance. Eighty per cent of those who were supervising research fellows were members of the regular faculty, with salaries coming from the departmental budget. Those whose support came from grant and fellowship funds, however, were sharing this responsibility. This should not be taken to mean that junior fellows were guiding the destinies of their peers. Rather, it may be assumed that the small group of fellows (128) who returned the faculty questionnaire was made up primarily of scholars and others holding advanced senior awards.

b. *Field of Interest During Fellowship Tenure*

A widely held concept of the postdoctoral research fellowship is that it should provide opportunity for broadening the fellow's horizons by study in a scientific discipline other than the one in which his major experience was gained. Our data do not indicate that this theory was working out in actual practice. Candidates for 1956-1957 fellowships, for the most part, proposed further study in the fields in which they were already trained, and those in which they wished to make their ultimate careers. Less than 20% of the M.D.'s, for example, proposed to serve their fellowships in preclinical departments. A more specific illustration—250 out of the 292 candidates looking forward to careers in internal medicine proposed to carry out their fellowships in departments of medicine.

c. *Geographic Location*

The one-year sample of applicants showed more inclination toward geographic change than toward migration to a new discipline, particularly at the junior level. About 60% of the junior candidates proposed to move to a new institution to undertake their studies, as compared with less than half of the senior candidates. At neither level did it appear that the reviewing boards were prejudiced against those who elected to remain in their present institutions or departments.

Although there was a tendency to congregate in the North Atlantic and New England states, the 1956-1957 applicants showed a reasonably wide geographic distribution in their choice of institutions for fellowship work. The number that proposed to go abroad was relatively modest (about 17%). These fellowships apparently were not being used widely as a device to secure the opportunity for foreign travel without clear scientific purpose.

There was little evidence of geographic prejudice in the reviewing process. Applicants who proposed to work on the West Coast fared as well as those choosing institutions in the North Atlantic states. Candidates for work in New England seem to have been favored to some extent, but no more so than those selecting the

Table

Northwest Central states. Candidates who wished to study in foreign countries did not receive favorable consideration quite as often as did those who proposed to remain in the United States. Probably this reflects a tendency on the part of reviewing committees to impose higher requirements on those proposing study abroad. 18

d. *Type of Institution*

Most of the 1956-1957 applicants preferred to work either in medical schools or in universities with affiliated medical schools. More than 80% of those who proposed to work in the United States chose this kind of environment. Relatively few (less than 10%) proposed to work in hospitals or research institutes not affiliated with a university. 4

e. *Duration of Fellowships*

Most junior fellowships had been awarded for terms of from one to two years. As programs of senior fellowships developed, opportunities for awards ranging from three to five years increased. 23

f. *Teaching Responsibilities*

Most of the fellowship programs studied stipulated full-time concentration on research, yet the survey indicates that fellows at both the junior and senior levels were playing a significant role as teachers during the tenure of their appointments. Half of the active senior fellows in 1957-1958 reported that they carried a considerable responsibility for teaching. This finding that senior fellows were making a major contribution was consistent with the aims of certain senior programs (the Markle Scholar Grants and others). Active junior fellows were playing a smaller, but still significant, role. Less than half reported that they did no teaching, and 9% said that they were carrying considerable teaching responsibilities. Among past fellows, M.D.'s had participated to a greater degree in the teaching function than had Ph.D.'s. 34
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g. *Academic Courses Taken*

One-quarter of all fellows, past and active, said that they had enrolled in academic courses during the tenure of the fellowship. This also is unexpected, since many agencies discourage any activities other than research. The physicians were more likely than the Ph.D.'s to enroll in formal courses. Those with both degrees had participated even more fully in formal academic study. Possibly some of the latter may have secured the second degree during the tenure of the fellowship. 36

Biochemistry was the most popular field (46% of those who took courses studied in this area). Physicians were equally likely to enroll in courses in mathematics, physics, or biophysics (45%, compared with 21% for Ph.D.'s). Those who held the Ph.D. degree were more inclined to study in the area of the biological sciences than were the M.D.'s. 36

B. Evaluation of the Fellowship System

Table

1. Impact on Recipients

a. Retrospective and Contemporary Views

When asked to evaluate their fellowship experience, most of the past fellows (84%) said that it had been of value to them in their preparation for their careers. Eighty-two per cent thought that the opportunity had come at the optimum time in their careers.

In general, past fellows were satisfied with the duration of their fellowship terms. Eighty-five per cent of those who had held senior fellowships, compared with 70% of junior fellows, felt that their terms had been long enough.

Nearly half of the past fellows expressed a desire for further fellowship experience at some future time in their careers. For the most part, this represented the desire of junior fellows to further their development through a senior fellowship experience, either of the long-term variety or for support for a sabbatical year.

What effect do fellowships have on the career goals of the recipients? Almost three-quarters of all past and active fellows said that the experience had confirmed their dedication to research; 4% reported that it had influenced them to leave research. Sixty-six per cent said that the fellowship experience had led them to select a career in which they would combine research with other academic responsibilities.

Of the 2,107 past and active fellows who had had teaching experience during their fellowship terms, 85% thought that it had been beneficial to them. More than 2,000 of the 3,461 past and active fellows indicated, either that they had no teaching experience as fellows, or that it had been minor, haphazard, or unsupervised. Of this group, 40% regarded this as a defect that should have been corrected to improve their fellowship preparation.

Almost unanimously, fellows found the formal course work they undertook during their fellowship terms to be beneficial. Of those who were not allowed to take courses, more than half (669 out of 1,234 past and active fellows) thought that they should have been permitted to do so.

In preparing the results of their investigations for publication, 573 of the 3,000 past fellows and active senior fellows (almost 20%) admitted to difficulty in formulating written presentations. It is a tribute to their candor that 982 (about one-third of this group) said that course work in composition, literature, or writing methods would have been helpful. A smaller number (601) cited lack of time as the reason for their difficulty in preparing their papers.

The small group of active senior fellows (128) who completed the faculty member questionnaire were asked whether they were satisfied with the distribution of their time among their various academic duties. Whether they were in clinical or preclinical departments, more than three-quarters of these fellows were pleased with the breakdown

Table

of their time. This compared with 52% of faculty members in regularly budgeted positions in the clinical departments and 67% of those in the preclinical departments.

120

b. A Prospective View

Interns and residents in the primary teaching hospitals were given an opportunity to evaluate present-day research fellowships and clinical traineeships in terms of their own interests and needs. Their reactions to specific features of research fellowships were mixed. Nearly 60% liked the opportunity for concentration in specialized areas of medical science. Some of them were concerned over the time involved in completing a research fellowship appointment. Half of the group reacted unfavorably to the level of stipends. More than half expressed dissatisfaction with fellowship regulations excluding the opportunity to maintain clinical proficiency or to gain teaching experience.

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The reaction of interns and residents to present-day clinical traineeships was quite similar to their assessment of fellowships. Sixty per cent liked the opportunity for concentration in specialized clinical areas. Again, they reacted unfavorably to the stipend level.

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More than two-thirds of the sample of interns and residents expressed interest in additional research training. As a group, they were less than enthusiastic over the present-day fellowship system as a means of attaining this experience. Of those who wanted more research training, only 15% said that they would prefer a research fellowship. Twenty-one per cent of those desiring more research experience would elect a clinical traineeship. The majority preferred to obtain this research background during their periods of residency training, either through part-time investigative experience concurrent with the residency, or through full-time concentration on research during brief periods of freedom from their residency duties.

88

Interns and residents were somewhat more disposed toward the fellowship as a means of improving their teaching skills. About 45% of the nearly 2,000 who wanted more experience in teaching chose a fellowship as their preferred mechanism. The remainder preferred on-the-job training.

89

When asked whether the presence of fellows and trainees on their services had affected the character of their own clinical training, only half acknowledged any effect. For the most part those who responded said that this had been beneficial—only 4% thought that the effect had been detrimental. About half of the group said that they would like to see a year or two of clinical traineeship or research fellowship experience (or both) credited toward specialty board certification, if this did not lengthen the time required.

92

Fellowship administrators will be interested to know that 84% of the interns and residents felt that there was insufficient information reaching them about research fellowships, traineeships, and other training opportunities.

Table

2. *Impact on Medical Education*a. *Contributions of Past Fellows to Academic Medicine*

Two-thirds of the fellowship alumni studied were serving on university faculties when they returned their questionnaires in 1957-1958. Half were in full-time academic work, the remaining 16% in part-time academic posts. Past senior fellows had chosen academic life to an even greater extent than the junior fellows. Almost 80% of the past senior fellows held academic positions in 1957-1958.

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In what fields were they serving our medical schools? The findings are consistent with the career interests indicated by applicants. Past fellows were evenly divided between the clinical and pre-clinical departments. Nearly half of the M.D.'s were in departments of internal medicine. Thirty per cent of the Ph.D.'s were serving in departments of biochemistry, and, surprisingly, only 8% in departments of physiology.

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What was the nature of their academic responsibilities? Since 40% of our sample of faculty members had held postdoctoral research fellowships, information from the faculty questionnaire is pertinent. These data indicate that they were carrying their share of the teaching load. No difference between the teaching responsibilities of past fellows and non-fellows was found. Past fellows, however, were playing a more active role in research than were faculty members who had not held fellowships.

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Our data do not support the theory that the fellowship system has developed a corps of "professional fellows," who wish to remain on fellowships, deferring academic service indefinitely. Of the active junior fellows, only 38% (178 out of 463) wanted renewals; senior fellows were even less interested in renewing their current appointments. Past fellows were interested, not in further junior fellowship support, but in advanced senior fellowships or sabbatical support.

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b. *Contributions of Active Fellows to Academic Medicine*

One view of the active research fellow, particularly at the junior level, is that he comes to his fellowship department solely as a learner. In this capacity he uses laboratory space and much of his supervisor's time, but gives nothing in return. Our information does not bear out this picture. Even at the junior level, the active fellow was making some contribution to the teaching function of his department. The small group of fellows identified by the faculty questionnaire provided further insight into the role of active senior fellows in academic medicine. These men had considerable teaching responsibilities; almost half of them were responsible for the organization and content of courses. Well over half were required to teach (64% of those in clinical departments, and 78% of those in preclinical departments). Many of them were responsible for supervising fellows and graduate students.

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At the same time, senior fellows among our faculty members

Table

were spending as much time in research as were grant-supported personnel, and appreciably more than faculty members on the regular budget. A majority of them were principal investigators under research grants.	118 119
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c. *A Look at the Future*

What are the potential contributions of postdoctoral fellowships to academic medicine? The needs have been documented by others. It is clear that the number of faculty vacancies in our medical schools has been increasing year by year. Three groups included in our survey may be considered as potential recruits to academic medicine: past fellows not now in academic careers; fellows who were active at the time of the survey; interns and residents interested in academic careers—the potential research fellows of the next few years.

(1) *Past and Active Fellows*

Past fellows not in full-time academic life were asked whether they would consider academic careers that assured a proper balance between teaching and research. More than 800 of the 1,339 past fellows in this category said that they would consider academic careers. Those concurrently holding part-time academic positions and those who had returned to fellowship status appeared to be the largest source of potential recruits, but there was interest among other groups, including persons in full-time hospital positions, government, industry, and medical practice.

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The primary choices of past fellows were then examined, both on the theoretical assumption that economic rewards were equal, and under the realities of present-day economics. Of the 1,339 past fellows not in full-time academic work, 553 indicated that this would be their first preference of a career in the light of economic reality. However, the picture is not wholly encouraging, since there was evidence that some of the past fellows in full-time academic life would prefer another career. A loss of about 250 faculty members to offset the potential gain of 550 was possible.

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The interest of active fellows in academic life provides more ground for optimism. More than three-quarters of the 1957-1958 senior fellows and two-thirds of the junior fellows selected full-time university positions as their primary career choice.

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What conditions do these fellows impose upon the medical schools if they are to accept full-time academic posts? Their requirements were studied in terms of the ranks and salaries for which they considered themselves eligible. The response is difficult to evaluate for past fellows, since age was uncontrolled. The demands of active junior and senior fellows appear quite modest and realistic.

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What further training would these fellows be willing to undertake to prepare themselves for academic posts? Their desire to take additional courses in the sciences basic to medicine was striking; their willingness to devote the necessary time and energy to fulfilling

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Table

the requirements for the second doctorate was even more impressive. Thirty-seven per cent thought that this additional qualification would place them in a better position to pursue their careers, and 25% said that they would take advantage of the opportunity to fulfill the requirements for the degree if it were possible without financial burden.

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(2) *Interns and Residents*

Of the 3,269 interns and residents in our sample, 25% said their first choice of a career would be a full-time medical school faculty post. (Eight per cent specified full-time salaried positions, 17% geographic full-time positions.) In addition to this group, another 58% of these young house officers said they would like to engage in part-time medical school teaching along with full-time practice.

68

The fact that 83% of the interns and residents expressed interest in spending at least part of their time in medical school teaching should be encouraging to those concerned with recruitment of clinical faculties. Keenest interest in full-time academic careers was shown by those specializing in medicine, pathology, pediatrics, psychiatry, and neurology. More than 30% of those in each of these areas elected full-time academic posts as their primary career choice. Desire to enter full-time teaching positions in the preclinical departments was lacking—only eleven persons preferred such a career.

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The relationship between previous research experience and the career choices of these physicians is interesting. Of those who previously had had investigative experience at any point in their careers, 38% preferred full-time medical school positions; only 15% of those without previous research experience chose such posts. The longer his research experience, the more likely was the individual to prefer full-time academic work. This, of course, does not imply a causal relationship. Undoubtedly those with academic interests had deliberately sought out opportunities for research experience in college, medical school, or during clinical training. However, this finding casts further doubt on the hypothesis that the research fellowship, with its full-time exposure to research, tends to draw personnel out of academic life.

83

What obstacles do interns and residents foresee to the pursuit of their chosen careers? Those who were interested in full-time medical school posts cited personal economic pressures (43%) and uncertainties regarding the availability of academic posts (35%). Those interested in part-time medical school teaching were less likely to worry about these factors, but did express some anxiety. Few were concerned that the opportunity for training in preparation for their careers might be lacking.

74

What further training would the interns and residents who were oriented toward academic medicine seek? If their responses are taken at face value, a major interest in Ph.D. training appears to exist. Of the 250 who selected full-time medical school posts, 48% said they would be willing to meet in full the requirements for the Ph.D. degree if this were possible without financial burden. Thirty-nine per cent of

Table

the group preferring geographic full-time positions answered in the affirmative. Although interest in securing the Ph.D. was less keen among those preferring private practice, it approached 20% for the group that elected careers in private practice combined with part-time research and teaching. Interestingly enough, dependency status did not appear to affect the response to this question. 84

In addition to the 758 people who were willing to undertake the full training toward the second doctorate, an additional 995 (30% of the entire sample) showed interest in course work as an alternative. Naturally, those who were oriented toward full-time or part-time academic careers were more interested in further study than those who preferred private practice alone. 87

The physicians who specified courses did not indicate as much interest in the physical sciences as did M.D.'s among past and active fellows. Only 13% of interns and residents who wanted courses specified work in these areas (physics, biophysics, or mathematics), whereas 24% said they would like to study biochemistry and 42% indicated the biological sciences. 87

The critical attitude of interns and residents toward research fellowships has been discussed. Those who were interested in academic posts, however, were more favorably disposed than the others toward the fellowship as a means of preparation. Thirty-three per cent of those who wanted full-time salaried posts preferred to secure research experience through a fellowship, and 23% through a clinical traineeship. Even this academically oriented group, however, was equally inclined to secure research training on a short-term basis during intermittent freedom from residency service. 88

IV. CONCLUSIONS

- A. *In the decade after World War II, the number of persons holding postdoctoral research fellowships in the medical sciences awarded in national competition increased more than tenfold.* Not quite 100 persons held such awards during 1946-1947—more than 1,000 active fellows were at work in 1956-1957.
- B. *The supply of fellowships increased more rapidly than demand.* In the prewar years, one-quarter of the new candidates for NAS-NRC's medical fellowships (then virtually the only national source) were approved. More than half of the new junior applicants for 1956-1957 received support from one of the twenty-two major agencies included in our study.
- C. *The postdoctoral fellowship structure of recent years has been an effective device for recruiting personnel into academic medicine.* It has not, as some have feared, fostered among recipients any strong preference for full-time investigative careers over well-rounded academic posts combining teaching and research. This conclusion is supported by several findings.
 1. Past fellows were playing a significant role as members of the faculties of medical schools in 1958. Two-thirds of the 2,709 fellowship

alumni in the twelve-year sample were then holding academic positions. This was nearly as large as the proportion of past NRC Fellows in Medicine serving on university faculties in 1952 (70%). The aim of the NRC program was to prepare its fellows for academic careers. The transition to a large national effort emphasizing recruitment of personnel for research apparently had not resulted in a diminished interest in academic pursuits.

2. Active fellows, particularly at the senior level, were participating significantly in the teaching function of the departments in which they were studying. Most of them rejected the idea of accepting employment under a research grant without academic duties or privileges.
3. Past fellows on medical school faculties were carrying their full share of the teaching load in their departments, and devoting more time to research than were non-fellows.
4. The proportion of past and active fellows interested in full-time research careers without other academic responsibilities was small (less than 15%). Active senior fellows, who had had more research fellowship experience than the junior fellows, were even less interested in such careers (8%).
5. In line with the above, the study of interns and residents revealed a positive relationship between the duration of research experience at an early stage of the physician's training and his interest in an academic career.

D. Little evidence was found that fellowships were being misused, either by recipients or supervisors.

1. The prediction that there would develop a cadre of "professional fellows," who would seek to remain on fellowships indefinitely, was not confirmed.
 - a. The desire of active junior fellows for renewal of their current appointments was moderate (38%). Active senior fellows were less interested (16%).
 - b. Although half of the past fellows wanted more fellowship experience at some future time in their careers, less than 10% wanted to return to junior fellowships. Their interest was in senior fellowship experience of the long-term variety (25%), or in short-term advanced support of the sabbatical type (15%).
 - c. The number of fellows who had enjoyed support from more than one agency was comparatively small (about 20%).
 - d. The total period of support for all past fellows was a little over two years apiece. This seems modest, considering that it included long-term senior fellowships and multiple terms for those who had been supported by two or more agencies. Fellows in general were satisfied with the length of these terms.
2. The amount of teaching being done by active fellows is not interpreted as an indication that they were being exploited by their departments.

This participation in teaching was more significant at the senior level, where teaching experience often is part of the design of the fellowship. The indications are that fellows had sought teaching experience voluntarily and felt that they had derived benefit from it.

3. These fellowships apparently have not been used as a device to support travel abroad without good scientific purpose.
4. There was a reasonably good geographic distribution of institutions in which 1956-1957 applicants and fellows chose to work. Although they naturally tended to congregate in areas where the medical schools are concentrated, the fellowship system was not serving, as some have asserted, as a vehicle to assemble all potential leaders in American medicine on the eastern seaboard.

E. Certain weaknesses in the fellowship system may be inferred from our data.

1. Applicants and fellows in 1956-1957 were not taking advantage of the opportunity traditionally offered by postdoctoral fellowships to broaden their intellectual horizons through exposure to new disciplines. Fellowships were being used as a means to continue study in the fields in which the recipients already were trained, and in which they planned their ultimate careers. Clinicians were less mobile than preclinical scientists in this respect. Less than 10% of the candidates who planned careers in clinical departments sought experience in a preclinical field.
2. The geographic mobility of applicants and fellows, although greater than their disciplinary mobility, left something to be desired. This was especially true at the senior level, where less than half of the applicants proposed to move to a new institution for their fellowship studies.
3. There existed an inequity in the distribution of fellowships, probably resulting in part from variations in demand. Fellowships have attracted a disproportionately large number of candidates from the fields of internal medicine and biochemistry. Other fields were poorly represented in our samples. Hence these two departments in the medical schools have benefited more than others by the influx of faculty members with fellowship training.
4. Interns and residents in the primary teaching hospitals felt strongly that they were not adequately informed about research fellowships and comparable training opportunities.

F. The survey indicated that three of the groups studied were promising sources for recruitment to academic medicine.

1. Past fellows who were not in full-time academic work in 1958 showed considerable interest in medical school posts. This interest was offset in part by indications that some past fellows who were then in full-time academic positions would prefer other careers. The potential gains outweighed the possible losses by approximately 300 persons.

2. The orientation of active fellows in 1958 toward full-time medical school posts was even more encouraging. Two-thirds of the junior fellows (some 300 people), and more than three-quarters of the senior fellows (about 225) gave full-time academic careers as their first choice. The demands of these two groups in terms of rank and salary were relatively modest and realistic.
3. Interns and residents in the primary teaching hospitals indicated an unexpectedly high interest in academic careers. Twenty-five per cent said that they would prefer full-time medical school posts. Another 58% elected to combine part-time teaching with private practice. The number of people indicating these two choices (810 and 1,898 respectively) is the more impressive when we recall that the sample analyzed represented 50% of those who responded to our questionnaire.

G. These three groups gave evidence of willingness to devote considerable time and energy to further preparation for academic careers.

1. Past and active fellows who preferred full-time faculty posts saw gaps in their training which they were eager to fill. Many took formal academic courses during their fellowship tenure. Others, not permitted to do this, felt that it would have been helpful. Physicians were especially alert to their need for further study in such disciplines as physics, chemistry, and mathematics. Twenty-five per cent of all fellows, past and active, said they would take advantage of the opportunity to secure the second doctorate if it were possible without financial burden. The Ph.D.'s were just as interested in securing the M.D. degree as were the physicians in seeking the Ph.D.
2. The interns and residents who indicated preference for full-time academic careers also were prepared to undertake extensive programs of study. They had some reservations about the suitability of present-day research fellowships and clinical traineeships as a means of preparing themselves for these careers. Many of them preferred the idea of combining research experience with their residency training. Yet their interest in formal course work in the basic sciences was high. Still more surprising, over 40% of those who preferred full-time academic careers (338 out of 810) said they would be willing to meet the requirements for the Ph.D. degree in a preclinical science if no financial burden were involved. The fact that these young physicians, who already have devoted many years to preparation for their life work, would consider several additional years of intensive study augurs well for academic medicine. It has profound implications for the design of medical fellowships in the nineteen-sixties.



SECTION I

BACKGROUND

A. Evolution of Present-Day Fellowship Patterns

Two organizations, the Rockefeller Foundation and the National Academy of Sciences—National Research Council, have been pioneers in developing policies and patterns for the award of fellowships in the medical sciences in national competition in the United States. Neither organization would claim to have originated the concept, and both would be quick to recognize the influence of European traditions and the work of other philanthropic agencies in this country in the early twentieth century. Indeed, the philanthropic support of scholarship in one form or another must be nearly as old as organized education itself. Certainly educational philanthropy on an individual basis flourished during the Renaissance, and aided the development of many branches of learning.

The great universities of Europe have long offered support to individual students at the undergraduate level. There was little delay in transplanting this mechanism to the United States. The Official Register of the Harvard Medical School records a bequest dating back to 1670, providing two fellowships and two scholarships. (It must be recorded that this early chapter in the history of the American fellowship system was not marked by open competition, preference for these awards being given to undergraduate descendants of one William Pennoyr.¹) This time-honored system of local support was extended to the graduate level as the graduate schools evolved.

Outstanding among scholarships for graduate education at the national level have been the awards granted by the Rhodes Trust. These were established in 1902, upon the death of Cecil Rhodes. They still bring a substantial number of Americans and citizens of the British Commonwealth and Colonies to Oxford each year for graduate study.

The development of postdoctoral fellowships awarded in nation-wide competition in this country began during World War I with the efforts of the Rockefeller Foundation. Even before the war had ended, the Foundation had offered a few fellowships. The Foundation's fellowship philosophy has been stated by Chester I. Barnard as follows: "It is the conviction that individuals can and should be developed for future leadership and creative achievement in important fields of endeavor. Thus the functions of the Rockefeller Foundation fellowship program have been to select individuals of outstanding promise in fields of interest defined by the general program of the Foundation, and to help prepare these individuals to make significant contributions to research and teaching or public service in the future."²

The earliest interest of the Foundation was in medicine, and its program from its inception was marked by the international emphasis which characterizes the Foundation's activities to this day. It recognized the debt of American medicine to Europe and acknowledged that the language of medicine

¹ Official Register of Harvard University (Harvard Medical School). Vol. LVII, No. 3, March 1, 1960, p. 68.

² The Rockefeller Foundation Directory of Fellowship Awards, 1917-1950, New York, p. ix.

was a supra-national one. Hence the Foundation set no national boundaries to its mission. Indeed, its first ventures were in China.

Influenced by the recommendations of its China Medical Commission in 1914, the Foundation soon made its first few awards, which enabled medical missionaries working in China to return to the United States for further training. From this early venture in the medical sciences, there evolved a large-scale effort to identify promising students of science, and to place them in centers of inspiration and training in preparation for service in their home universities. The operation became a substantial one shortly after the war, and in 1924 it expanded into the natural sciences with the formation of the International Education Board.³ In addition to the medical sciences, the fields stressed by the Foundation in the intervening years have included the natural sciences, the social sciences and the humanities. The emphasis upon medicine and public health, however, remained a primary one.

The National Academy of Sciences began its collaboration with the Rockefeller Foundation the year after World War I ended. While its first entrance into the fellowship field was through the physical sciences, it is interesting to note that this earliest program of NRC fellowships in one sense was born of the interest of the Rockefeller Foundation in the medical sciences.⁴

Four decades ago, as is well known, academic medicine was in transition, stimulated by the survey and writings of Abraham Flexner. The recruitment and training of personnel for the faculties of the medical schools were pressing problems. Their resolution had been postponed by a world war. The Rockefeller Foundation was concerned that medical investigators lacked adequate background in physics and chemistry.⁵ One solution proposed by the Foundation was the creation of institutes for research in physics, chemistry, and mathematics, along the lines of the present-day Rockefeller Institute. While this was being considered, the Academy-Research Council made a counter proposal that the first need was for the training of men in the techniques of research in the physical sciences. The joint decision of the Academy and the Foundation was to meet the need through postdoctoral fellowships. So it was that the "National Research Fellowships in the Natural Sciences" were inaugurated in 1919.

Even as these first NRC Fellowships were being developed, the Division of Medical Sciences of the Academy's new National Research Council was surveying the need for trained personnel for medical school faculties. Published in the *Journal of the American Medical Association* early in 1920,⁶ the report of this survey caught the interest of the Rockefeller Foundation. These two young organizations thereupon joined forces in an effort to remedy a shortage of personnel which they regarded as critical, by providing postdoctoral fellowships in the field of medicine. In 1922, the Medical Fellowship Board of the Division of Medical Sciences was created to carry out this mission and the first "National Research Fellowships in the Medical Sciences" were awarded. Under the chairmanship of Dr. Frederick P. Gay, the Board

³ Fosdick, Raymond B. *The Story of the Rockefeller Foundation*. New York: Harper & Bros., 1952, pp. 147-149.

⁴ *Ibid.*, pp. 145-146.

⁵ *Ibid.*, p. 145.

⁶ Division of Medical Sciences, National Research Council. *Investigation of Conditions in the Departments of the Preclinical Sciences*. J.A.M.A., 74:1117-1122, April 17, 1920.

consisted of Dr. David L. Edsall, Dr. Joseph Erlanger, Dr. G. Carl Huber, Dr. Edwin O. Jordan, Dr. Dean Lewis, Dr. William G. MacCallum, Dr. Lafayette B. Mendel and Dr. Walter W. Palmer.

The members of the Medical Fellowship Board approached their task in a spirit of experimentation. It was their aim to identify men of highest potential and to give them an experience designed to bring out their capabilities as medical teachers. They agreed at the outset, in the light of this purpose, that candidates who wished to confine their careers to research should not be considered. Seeking to define the fellowship "curriculum," they stated in their first meeting that fellows would be placed on the staffs of universities or medical schools, with the expectation that they would do a certain amount of teaching and would take courses, as well as participate in laboratory research.⁷ Apparently they saw at once that a fellowship so defined might permit a hard-pressed department to take advantage of the fellow by overburdening him with routine teaching duties. In any case, they qualified the statement as follows in an announcement of awards issued later in 1922: "The first emphasis . . . is laid on a definite research program but, since they are also designed to fit recent graduates for a teaching career in some one of the branches of medicine, opportunities, but not obligations, for a small amount of teaching are required."

Apparently the fellowship curriculum was quite flexible during the first five years of the program. It varied considerably with the background which the individual fellow brought to the fellowship. In 1927, a reorientation took place, and a new Board was formed under the leadership of Dr. G. Carl Huber, Professor of Anatomy at the University of Michigan. It was then decided that the best preparation for a career in academic medicine was a period of full-time research in the basic sciences. The original objective was unchanged, but a new mechanism for its implementation was being developed—the fellowship that provided full-time concentration on research. Thus began a pattern of training which the Board continued for some thirty years and which later provided a model for numerous agencies with somewhat different objectives.

Other philanthropic agencies that pioneered in the fellowship field should be recognized. The Commonwealth Fund inaugurated its international fellowship program in 1925. This covered all fields of learning, and was aimed at the selection of potential leaders in scholarship. They were brought to the United States and given opportunity to familiarize themselves with our institutions and customs. By this means, the Commonwealth Fund reinforced the Rockefeller Foundation's efforts at increasing international good will through educational philanthropy. Not until 1937 did the Fund establish a special program devoted to advancing the interests of medical education. The purpose of this new enterprise was to enable persons already established in medical school faculties to extend and broaden their knowledge. It probably was the first program in the medical field aimed at meeting the needs of more mature men, well beyond the level of the usual postdoctoral fellowship.

However, in the general field of advanced (or "senior") fellowships, the Guggenheim Foundation long before had blazed the trail. Its concern with improving the quality of education by providing special opportunity for the senior scholar dates back to the establishment of the Foundation in 1925.

⁷ Medical Fellowship Board, National Research Council. Minutes of First Meeting, June 13, 1922, p. 1.

This has always been the sole activity of the Foundation, and its contribution to the field of scholarship cannot be overemphasized.

While the Commonwealth Fund was the first to adapt this program to the medical sciences, a new dimension to the senior fellowship in medicine was added in 1941, again through the joint offices of the Rockefeller Foundation and the Academy-Research Council. Alan Gregg, then Director of the Foundation's Medical Science Division, had expressed increasing concern over the number of vacancies he predicted would soon be occurring in the major chairs of medicine throughout the country. He questioned whether truly qualified men were available in sufficient number. He proposed and worked out with the Medical Fellowship Board the details of the new "Welch Fellowships in Internal Medicine." These enabled men of high potential for academic careers in internal medicine to spend an extended period of time in preparation. They were men well past the usual postdoctoral level. In their tenure of three to six years, they were able to extend their knowledge in their own fields and to acquire a firmer grasp of research methods and of the basic sciences than was possible in the ordinary one- or two-year fellowship. The stipends offered would be considered modest by present-day standards, but were well above the usual level at the time the fellowship was inaugurated. The Foundation made a grant of \$168,000 for this purpose over a ten-year period, extended because of war-time interruptions through 1954. In this thirteen-year period only seven such awards were made, but they provided a prototype for the long-term advanced fellowship in medicine, just as did the NRC Fellowships for the postdoctoral research fellowships.

Other philanthropic agencies made contributions of real value to the development of the fellowship structure as we know it today. The interest of the Julius Rosenwald Fund, for example, also dates back to World War I. One of the concerns of the Rosenwald Fund at that time was the provision of funds for Negro graduates in medicine. When the NRC's Medical Fellowship Board was established, the Rosenwald Fund discontinued this function and referred candidates coming to them to the Board. Other programs undoubtedly should be included in any complete catalogue of the contributions that shaped our present postdoctoral fellowship system.

The funds available for the NRC Fellowships in the Medical Sciences permitted the appointment of a limited number of highly selected young men and women (never more than forty in a given year, and sometimes as few as ten). The record shows that these men became leaders in academic medicine and contributed significantly to the education of the present generation of medical scientists. The Medical Fellowship Board made an effort in 1952 to evaluate the experience by studying the roles played by past fellows and rejected applicants.⁸ In interpreting these data, the Board recognized that it was impossible to distinguish among the effects of wise selection, well planned and guided fellowship experience, and even of the prestige which the NRC Fellowships had acquired over these first two decades.

World War II slowed the NRC program to a mere trickle, but set the stage for the burgeoning of the fellowship structure immediately thereafter. Like all major wars in modern times, it brought about significant advances in medical knowledge and skills. These advances were accelerated and multiplied

⁸ Bowen, Lois G. Subsequent Careers of Applicants for Postdoctoral Medical Research Fellowships. *J.A.M.A.*, 152:693-697, June 20, 1953.

as Government, spurred by the war emergency, undertook the support of medical research on a large scale. At the close of the war, the flow of research funds was not cut off, as might have been anticipated. Enlightened leadership and a public opinion with a growing awareness of the potentialities of science made it possible to augment the support of medical investigation. Public and private sources participated in this development in the hope of extending the war-time gains and of making a successful attack on the major diseases.

An expanded research effort demanded an increased supply of trained manpower. This was pointed out in 1945 by Vannevar Bush, wartime Director of the Office of Scientific Research and Development, who recommended that the nation renew its scientific talent through a major program of predoctoral and postdoctoral fellowships.⁹ The proposal was enthusiastically supported, and the development of large governmental fellowship programs was undertaken without delay. The U. S. Public Health Service entered the field in 1946, and soon became by far the largest donor of postdoctoral fellowships for the training of medical investigators. The National Science Foundation, created in 1950, immediately set about to support fellowship training in all fields of science, including medicine.

A parallel development was the creation and expansion of the voluntary health agencies of the country. Funds for the promotion of research on fatal diseases were being collected on an ever-increasing scale from a public newly aware of the potential contributions of research. Here also, it was promptly recognized that a substantial portion of the resources available for research must be set aside for the training of future investigators if these unprecedentedly large sums were to be effectively used.

The National Foundation for Infantile Paralysis (now the National Foundation) was in the vanguard of the effort to recruit and train personnel for research. They had recognized the need by 1940, and had requested that the Academy-Research Council's Medical Fellowship Board guide and administer their fellowship program. A beginning was made before the war emergency diverted most prospective fellows into other areas. The program remained alive during the war years and was actively carried forward by the Board until 1949, when the Foundation assumed responsibility for its own program.

The American Cancer Society followed suit in 1946, asking the Academy's Division of Medical Sciences to create a Committee on Growth to evaluate fellowship applications, as well as research grant proposals, on its behalf. A number of the smaller voluntary health agencies turned to the Academy for guidance, while others established their own independent programs of research fellowships. In either case, they followed the pattern of one- or two-year postdoctoral fellowships established by the Board and the Rockefeller Foundation twenty-five years earlier.

Quite dramatically, there had occurred the transition of the postdoctoral fellowship from an uncommon opportunity in science to a mass subsidy. A mechanism originally created to identify and develop an elite as a corps of medical educators now was being used as a means of large-scale recruitment for research.

Thoughtful leaders in academic medicine were concerned that undesirable side effects might accompany the rapid and continuing expansion of the

⁹ Bush, Vannevar. *Science, the Endless Frontier*. Washington: Government Printing Office, 1945, pp. 3-4, 18-21, 91-92.

research functions of the academic institutions. If the best of the young medical scientists were to be encouraged to make their careers in full-time research, for example, who was to teach and inspire their successors?

The John and Mary R. Markle Foundation was in the forefront in seeking to protect the integrity of the academic tradition. The Foundation in 1948 created a series of long-term senior awards—"Grants for Scholars in the Medical Sciences." The aim was to assist the university medical schools by grants enabling them to retain on their faculties some of the most promising of the young men who had recently completed the usual training afforded by a postdoctoral research fellowship. The American Cancer Society was quick to recognize the merits of this development and proceeded to adopt it with a view to retaining qualified cancer investigators on university faculties. A number of agencies inaugurated other variations of the long-term senior fellowship. Examples are the Established Investigatorships of the American Heart Association, which assured five-year financial support for men who looked forward to careers in cardiovascular research. They differed from the Scholar Grants of the Markle Foundation in that the terms of the award specified full-time concentration on research and proscribed other institutional responsibilities. The Heart Association later inaugurated a system of life-time Career Investigatorships, a device which attracted the attention of other agencies and appears to be gaining in favor.

By 1956, ten years after the post-war expansion in fellowships began, the number of postdoctoral awards available each year had increased tenfold.* The decisions that shaped the new fellowship structure had been made by outstanding physicians, medical educators, and administrators who, as consultants and staff members to the national granting agencies, were responsible for initiating and guiding the programs described in the preceding pages. They had brought to bear upon these decisions their own rich experiences and their intuitive understanding of the changing needs in medical science. The objective information that was needed if further decisions were to be made with wisdom was lacking. What was the combined magnitude of current fellowship programs at the national level? Could their impact on the academic institutions be assessed? What were the needs of the future so far as personnel for medical education and research was concerned, and what were our potential resources for meeting these needs? In the hope of providing some answers to these questions, the Division of Medical Sciences undertook this survey of the national fellowship effort.

B. Objectives of the Survey

The two basic objectives of the survey were:

1. To describe the present system of postdoctoral fellowships in the medical sciences awarded in national competition.
2. To evaluate the impact of the fellowship system:
 - a. Upon the recipients themselves, and
 - b. Upon the institutions of academic medicine.

To carry out these objectives, the Board posed a wide range of questions, some aimed at measuring the size and growth of the fellowship structure, others involving sampling of opinions and attitudes.

One question was concerned with supply and demand, i.e., the number

* See Table 22, Appendix III.

of awards available in relation to the number of applicants in a given year. The survey sought, not only to estimate the size of the current fellowship population, but also to trace the increase in number of awards from year to year since World War II. An effort was made to measure the demand for such awards in a single recent year and to compare it with that in earlier years.

Next we studied the characteristics of fellows, past and active, including their backgrounds of education, experience, and scientific interests. This information was compared with corresponding data for all candidates considered by the national reviewing boards in a single year.

The nature of the fellowship experience (i.e., the "curriculum") at both the junior and senior postdoctoral levels also was examined. For example, the survey considered the extent of their participation in teaching and in formal courses, and the environment in which they studied.

Having described the fellowship system, the survey turned to the more difficult problem of evaluating it. Objective criteria included the record of the positions held by past fellows, which provided some indication of the degree to which fellowship "graduates" were carrying out the purpose for which their awards were made. The career plans of past and active fellows were studied as an indicator of their potential contributions to medical science. Another approach was to seek the fellows' own evaluation of the impact of the fellowship on their careers.

The attitudes of a younger group of people who had completed medical school but were still in clinical training also were examined. This group was considered important because they constituted the pool from which future fellows might be expected to come. They were asked wherein they regarded the present system of fellowships to be well, or badly, adapted to their own needs. The survey inquired into the gaps which these men saw in their basic education. Fellows also were queried along these lines and encouraged to identify deficiencies in their fellowship training.

Faculty members were asked to evaluate the balance between teaching and research in their own careers and in their departments. The Board recognized the pitfalls of inferring direct causal relationships between the expansion of the fellowship system and any imbalances suggested by the replies. Clearly a powerful influence, being studied by other groups, was the effect of the tremendous accretion in the funds available for direct support of research through grants and contracts.

Germane to this study were such questions as the effect of the fellowship system on the geographic distribution of personnel across the country. Migrations of fellows from one scientific discipline to another were also of interest.

The survey included an effort to measure the potential pool, or reserve, of personnel that might be tapped to meet current and future needs for personnel in academic departments. Evidence on this point was secured by examining the career choices of a large number of medical scientists before, during and after fellowship training. These men then were questioned about the extent and nature of the further training they desired.

C. Method of Study

1. Instruments Used in Gathering Data

Many of the questions at issue seemed not to be susceptible of investiga-

tion except by gathering opinions. For this reason, the major portion of the data was obtained by means of a series of questionnaires. It was considered desirable to assemble the views of the broadest possible cross-section of medical scientists at various stages in their careers. Six questionnaires were utilized in the course of the survey and these appear in Appendix A.

Questionnaires were sent to the following groups:

a. Persons previously supported as postdoctoral fellows of the principal agencies engaged in granting fellowships in the medical sciences at the national level.

b. Those who were active fellows of the same agencies at the time the questionnaire was mailed (1957-1958), working at the immediate postdoctoral level.

c. "Senior" or "advanced" fellows under appointment from the same agencies during 1957-1958.

d. Interns and residents of the primary teaching hospitals affiliated with the U.S. medical schools, together with those in a selected group of loosely-affiliated and non-affiliated hospitals.

e. The heads of eleven departments in each of the approved U.S. medical schools.

f. Full-time faculty members in seven departments of these schools.

The director of the survey carried out numerous personal interviews with representatives of all the groups surveyed. With their help he was able to improve the drafted questionnaires before they were circulated widely. These interviews were helpful in supplementing and interpreting the data obtained by questionnaire.

Information gathered by questionnaire was augmented by a study of all applications submitted to the national fellowship-granting agencies for a single year (1956-1957). By this means, it was possible to assess demand in relation to the supply of fellowships for that year, and to secure certain details regarding the backgrounds of fellows that would not so readily have been obtained by a questionnaire.

2. Definition of the Groups Studied

Much confusion surrounds the use of the term "fellowship." It is used, or misused, today to cover a wide range of appointments in medicine and related fields at the predoctoral and postdoctoral levels. Many of these involve the most routine kind of training or institutional duties, the stipends for which essentially are salaries for services rendered.

For purposes of this survey, the postdoctoral fellow is defined as (1) one who holds the M.D., Ph.D., or comparable doctoral degree, and (2) receives in nation-wide competition financial support that enables him to devote full time to further development of his capabilities in medical investigation, in accordance with his own conception of his needs, in preparation for a career in research or teaching, or both. Institutional services, while never obligatory, might be performed by the fellow under this definition. If so, they would be undertaken of his own free choice and solely because they would be of value to his development as a scientist.

The above definition rules out persons essentially in residency training, even in those institutions where residents do have the opportunity for con-

siderable additional experience in the basic sciences, and for some exposure to research if so minded. To this extent, restriction of the survey to fellowships awarded in national competition means that we cannot provide a full picture of the opportunities for laboratory experience available to men in clinical training. The same reflection applies to individuals, whether they held the M.D. or the Ph.D. degree, who were carrying out assigned roles under research grants, although a small sample was reached through the questionnaire to faculty members. Such persons may be working side by side with bona fide fellows, and their day-to-day activities may be much the same. Nevertheless, they are not fellows, under our definition, since they are paid to do a specific piece of work. In contrast, fellows' programs ideally are planned to advance their scientific capabilities.

Since the survey was concerned with the impact of fellowships on the medical schools of the United States, programs aimed primarily at international exchange and the creation of international good will were omitted. Foreign fellows coming to this country under exchange fellowships were excluded unless it was clear that they expected to remain in this country. In the light of the considerable flow of personnel between Canadian and U. S. medical schools, Canadian citizens were included in the survey.

In the selection of the sample the relevance of the fellow's program to the medical sciences was kept in mind. Many of the cooperating agencies limit their programs to the advancement of the interests of medicine, either broadly or in more specific channels. All applicants and fellows of these agencies for the periods selected were included by definition. The remaining agencies, whose programs ranged across the sciences or beyond into the humanities, created a problem in classification. The lists of fellows and candidates provided by these agencies were screened carefully. The decision as to which of their fellows should receive questionnaires was made on the basis of the pertinence to medical science of their individual backgrounds, fellowship programs and ultimate goals. Persons trained exclusively in dentistry and the veterinary sciences were excluded.

Many of the agencies concerned award fellowships for short terms. Persons who held their awards for less than six months were excluded, as were all part-time fellows.

Within the fellowship population there are two fairly distinct groups. What we have chosen to call the "junior" fellowship is usually awarded within a few years after the candidate has received the doctorate. The initial term ordinarily is for one or two years and the fellow is regarded as being, comparatively speaking, a newcomer to research. The "senior" fellowship covers a wide range of awards. As the term implies, it is awarded at a somewhat later stage in the fellow's career and generally to persons who already have had the advantage of experience comparable to that offered by the junior fellowship. The senior fellowship may offer the more mature individual a chance to broaden his background still further before he undertakes his permanent career. On the other hand, it may be awarded at any stage in this career as an opportunity to broaden his competence in his own field or gain a new viewpoint through temporary change of scientific environment. Often they are specially designed to aid sabbatical study. Some of these senior fellowships are awarded for terms of one year or less; others involve long-term

appointments. These included the Scholar programs of the John and Mary R. Markle Foundation and the American Cancer Society, the Established Investigatorships of the American Heart Association, and the Faculty Level Awards sponsored by Lederle Laboratories.

In the studies of applicants and fellows (Sections II and III), a distinction was made between "new" awards or applications and "renewals." The term "new fellowship" as used in this report will cover the first appointment made to a candidate by a given agency in a given category. A "new" junior or senior fellow may have held prior support from another agency; a "new" senior fellow may even have held a junior fellowship from the same agency in the past. An award is designated as a "renewal" only if the supporting agency has reviewed an application from the individual for extension of his original term in competition with other requests. Thus a senior fellowship would be regarded as a "new" award throughout the period for which the first appointment was made, even though it may have been a three-year or five-year award. After the initial year of the first appointment, it is regarded as a "continuation" of a new appointment. It becomes a "renewal" only after formal application had been approved at the end of that term.

3. *The Cooperating Agencies*

The following twenty-two national fellowship-granting agencies provided mailing lists of past and active fellows as well as the data concerning applicants*:

American Cancer Society	John and Mary R. Markle Foundation
American College of Physicians	National Academy of Sciences-
American College of Surgeons	National Research Council†
American Heart Association	National Foundation for
Arthritis and Rheumatism Foundation	Infantile Paralysis
Jane Coffin Childs Memorial Fund	(now The National Foundation)
The Commonwealth Fund	National Institutes of Health
The Dazian Foundation	National Multiple Sclerosis Society
The Guggenheim Foundation	National Science Foundation
The Howard Hughes Foundation	National Tuberculosis Association
Lederle Laboratories	Damon Runyon Memorial Fund
Life Insurance Medical Research	Helen Hay Whitney Foundation
Fund	New York Heart Association

* One of the cooperating agencies provided lists of its past and present fellows, but was unable, under its administrative policies, to grant the Academy access to its files of application materials. Fellows appointed by this agency received the questionnaires and are included in the tabulations in Section III, but its applicants were necessarily omitted from the analysis in Section II. Since it was not one of the larger programs so far as the medical sciences were concerned, the omission is not regarded as serious.

† The Academy-Research Council administered fellowship programs during the thirteen-year period of the study for a number of agencies which are not listed above. The fellows supported by these programs were included in the study. These organizations were:

American Society of Anesthesiologists, Inc.
Donner Foundation, Inc.
Lilly Research Laboratories
Merk and Company
The James Picker Foundation
The Rockefeller Foundation
U.S. Atomic Energy Commission

SECTION II

A STUDY OF FELLOWSHIP APPLICANTS

1956-1957

Before World War II, the award of an NRC Fellowship in the Medical Sciences was regarded as a signal honor as well as an opportunity. Awards were limited in number, and the competition naturally was keen. The selection ratio varied from year to year. In some depression years, about one applicant in ten was successful in obtaining an award. During the twenty-year period 1922-1942, about 25% of new applicants were awarded fellowships. Since this was the only sizeable program in these two decades, it provides a fair basis for comparison.

As the supply of fellowships has increased steadily in the post-war years, what has happened to the over-all pattern of selectivity? This question can be answered readily for individual reviewing boards. It is more difficult to answer from the standpoint of the over-all national picture, because this requires information about the extent to which candidates submit applications to more than one agency. The study of applicants for 1956-1957 sought to assess the total "demand" for that year in terms of candidates rather than of applications.

A. Method of Study

To measure "supply and demand," it was necessary to secure enough identifying information to permit accurate elimination of duplications. This involved reference to application materials from the files of each agency. We took advantage of this opportunity to obtain additional details of the candidates' backgrounds, fellowship proposals, and future plans. Thus, for a single year the characteristics of fellows were studied in greater depth than appeared feasible through use of the questionnaire method alone, and comparable data were secured concerning rejected applicants.

Under our definition of the postdoctoral fellowship (Section I, page 1386) which was applied in selecting this sample, the data provide a conservative measure of supply and demand. The magnitude of the national effort would have appeared much larger had the survey included short-term fellowships, exchange opportunities, clinical traineeships, and applicants from foreign countries. *Applications reviewed* in the year ending June 30, 1956, for fellowships tenable during 1956-1957 were studied. Long-term senior fellows appointed in some prior year and still active during 1956-1957* were excluded from the analysis, since they could not be considered as a part of the "demand" for fellowships. The tabulations relating to this section of the study therefore include only those applicants for senior fellowships who proposed to begin their terms during 1956-1957 or who requested renewal appointments for that year.

This phase of the survey was initiated late in 1956. The proposal was to study all candidates who requested fellowships for the year 1956-1957. This proved difficult because of differences in the time schedules and reporting procedures of the cooperating agencies. It was decided therefore to abstract all applications reviewed by the agencies during the year July 1, 1955, through

* i.e., holders of "continuing" appointments as defined on page 1388, Section I.

June 30, 1956. Theoretically, the successful applicants reviewed during that period would have been expected to serve their fellowships during 1956-1957. However, it is likely that a few started their fellowships late in 1955 or deferred them into 1957.

B. Results

1. "Supply and Demand" (Tables 1-2)

Of the 1,307 applicants, 365 (28%) were denied support by all of the agencies to which they applied. Six per cent (80 persons) were offered fellowships by one or more of the agencies but declined all such awards. The remaining 66% (862) were offered and accepted fellowships (Table 1).

Some agencies designate alternate lists from which further appointments are made as awards are declined. Therefore, we cannot assume that all of the fellowships that were declined by the 80 applicants were left vacant. The number of awards accepted therefore approximates the total "supply" of fellowships for that year, if we choose to define "supply" as including renewal awards. The 6% who declined all awards offered them by the agencies concerned presumably received positions or other awards that were equally attractive. They could hardly be considered as part of the "unsatisfied demand." It is perhaps misleading to refer even to the 28% who were not approved by any agency as representing an "unsatisfied demand." Some of them probably received fellowships or comparable opportunities through their home institutions or from other agencies not included in the survey.

Table 1 implies that for the average candidate the odds were two to one in favor of obtaining a fellowship during 1956-1957. However, most of the reviewing boards dealing with medically trained applicants give preference to renewal applications. The data presented in Table 2 indicate that this was the case during the year in question, so far as junior applicants were concerned. On the other hand, there was little discrimination at the senior level. The percentages accepted within each group and level were:

	Junior	Senior
Per cent of new applications accepted	55	61
Per cent of renewal applications accepted	85	66

The extent to which individual candidates submitted applications to more than one agency provides insight into one facet of "demand." The duplication was as follows:

Number of candidates who filed application with:	Junior	Senior
One agency	824	241
More than one agency	271	20
Total applicants*	1095	261
Total applications filed by these candidates	1548	291

Senior applicants in particular were inclined to limit their applications to a single source. The specificity of the objectives of most senior programs probably played a part in this. Even at the junior level, the majority of candidates applied to a single agency, and only 118 submitted three or more applications.

* The 49 people who applied at both the junior and senior levels are counted in each of these totals.

2. Types of Supporting Agencies (Table 3)

The data were gathered with the understanding that the characteristics and views of fellows would not be analyzed in such a way that the programs of individual supporting agencies could be identified or compared. For purposes of analysis, however, the agencies have been grouped into three general categories: (1) the private philanthropic foundations*, (2) agencies of Government, and (3) the voluntary health agencies.

During 1956-1957, Government provided over half of the fellowships, and the voluntary health agencies a little more than one-quarter. The role of the private philanthropic foundations and industry in the over-all picture was relatively small. However, Government awarded only 42% of the senior fellowships, compared with 62% of the junior fellowships. The private foundations played a more significant role than the voluntary health organizations in the senior fellowship area. Since the foundations were active in sponsoring long-term senior fellowships, they probably were supporting a number of people in this category who were not included in this one-year sample of applicants. Had the analysis included continuing senior appointments awarded in previous years, it is possible that the role of private philanthropy might have assumed still larger proportions.

3. Backgrounds of Applicants

a. Education (Tables 2, 4)

Seven hundred and one (54% of the applicants) held the M.D. degree and 648 (nearly 50%) the Ph.D. or Sc.D. degree (Table 4). The 42 persons who held the M.D. and Ph.D. degrees are included in both of these totals.† Candidates holding the M.D. degree had a slight advantage over those who were not clinically trained in the competition for junior fellowships (Table 2). While the number of cases is small, this situation appears to have been reversed at the senior level.

The baccalaureate and doctorate institutions of the candidates and the schools in which they proposed to carry out fellowships are classified in Table 4. Universities with affiliated medical schools provided a majority of the candidates and constituted the preferred locale of fellowship study. Half of the applicants received their baccalaureate degrees in universities that had affiliated medical schools, and 81% of the Ph.D.'s came from schools in this category. Table 4 indicates that 66% of the candidates wanted to carry out their fellowship studies in this kind of environment. This figure is artificially low because 17% proposed to study abroad, and no attempt was made to categorize foreign institutions in this way.

Only 8% of the applicants chose to serve their fellowships in research institutes or hospitals within the United States that had no connection with a university. Again, this figure might have been a little higher had an accurate breakdown for foreign institutions been feasible.

Ten per cent of the physicians and 5% of the Ph.D.'s had earned their degrees in foreign institutions. Because programs aimed primarily at ex-

* Including programs supported by industry.

† In Table 2, and in several other tabulations in Appendix II, candidates who held the Ph.D. or Sc.D. degree in combination with the M.D. degree were included in the M.D. category.

change of personnel with other countries were not included, the percentage of the entire group that wished to serve their fellowships overseas (17%) was kept to a minimum. Taking this factor into consideration, the percentage desiring to go abroad still appears relatively modest. This would not suggest that any large number of candidates were attempting to use fellowships merely to satisfy an urge for foreign travel without clear scientific purpose.

b. *Status at the Time of Application* (Table 5)

The prefellowship positions of the candidates, expressed as a percentage of all applicants, may be summarized as follows:

Completing work for the doctorate	28
Resident	25
Full- or part-time academic positions	20
Postdoctoral fellowships	13
Other positions	14
Total	100
Total applicants	(1307)

Most of those who were completing work for the doctorate at the time of application were Ph.D. candidates, but a few were senior medical students who desired fellowship experience in lieu of or prior to their advanced clinical training. Renewal applicants were analyzed according to the positions they held at the time when they *originally* applied for the fellowship in question; thus they are not included in the 13% who came from previous postdoctoral fellowships.

There is little indication in Table 5 that the reviewing boards were influenced by the nature of the candidates' positions at the time of application. Percentage-wise, the prefellowship status of the group that received fellowships was quite similar to that of the total applicant group. Deviations from the over-all acceptance ratio of about 66% occurred, but these were in the smaller categories. For example, 80% of the 39 interns who applied received fellowships as compared with about 50% of the small groups from full-time practice, or from instructorships.

c. *Sex* (Table 6)

Ten per cent of the entire sample of applicants were women (137 out of 1,307). At the junior level, women made up 12% of the candidates (128 out of 1,095) but they represented only 5% of the smaller group applying at the senior level. Clear evidence of discrimination on the basis of sex is lacking, although Table 6 does suggest that, among the physicians who applied, women did not fare as well as men.

d. *Age* (Table 7)

The age range for junior and senior candidates was:

	Per cent of total	
	Junior	Senior
Under 25	3	0
25-29	40	9
30-34	46	45
35-39	10	29
40 or over	3	17
Total	100	100
Total candidates*	(1095)	(261)

* 49 persons applied at both levels.

The median age of physicians when they applied for junior fellowships was about 31, that of Ph.D.'s was approximately 29. This difference no doubt reflects the amount of clinical training usually undertaken by M.D.'s before they apply for postdoctoral fellowships.* Conversely, candidates for senior fellowships who held the Ph.D. were a little older than the physicians applying at that level (the median ages were about 36 for Ph.D.'s and 33 for M.D.'s). The explanation for this may lie in the special make-up of our sample of senior applicants. For example, one component consisted of prospective scholars of the Markle pattern, a majority of whom are M.D.'s, and who apply for these grants at a relatively early age. On the other hand, a majority of the sabbatical-year candidates probably hold the Ph.D. degree. In general, these men are considerably older than the average M.D. scholar candidate.

Age would appear to be a factor in selection both for junior and for senior fellowships. At the junior level, the younger the candidate, the better were his chances of success, whereas the acceptance rate for senior candidates increased in direct relationship with age. These relationships were not changed when M.D.'s and Ph.D.'s were considered separately.

e. Time Lapse since First Doctorate (Table 8)

The time that had elapsed since fellows and candidates received their first doctorates again reflected the demands of the residency system. The physicians tended to apply for junior fellowships several years after the degree was conferred, whereas Ph.D.'s were more likely to apply during their final year of doctoral study or in the year immediately following. Of the M.D. applicants, 83% (487 out of 586) had held the doctorate three years or more when they applied; 65% of the Ph.D. group (330 out of 509) either were candidates for the degree or had held their doctorates one year or less.

In the competition for junior fellowships, the data suggest that reviewing boards gave preference to physicians who were only one year out of medical school, most of whom probably were serving internships at the time they applied. (This is consistent with the data for interns in Table 5.) Similarly, Ph.D.'s who had held their doctorates for about two years appeared to be favored in the selection process. In both instances the groups are small.

In contrast with the data on their ages (Table 7), Ph.D.'s applied for senior fellowships at a shorter time after completing work for the doctorate than did physicians. Twenty-one per cent of the M.D.'s (29 of 138 applicants), compared with 46% of the Ph.D.'s (56 of 123 applicants), applied within the first five years after graduation. Those who had held their doctorates for four years or more appear to have received preference for senior fellowships, regardless of their degrees.

f. Previous Fellowship Support (Table 9)

At the junior level, 70% of the applicants holding the M.D. (408 out of 586) and 87% of the Ph.D.'s (443 of 509 applicants) had held no previous

* Data in Table 5 suggest that a number of the candidates holding the M.D. degree had had some clinical training before applying for a fellowship. Responses of past and active fellows to questions regarding their backgrounds are consistent with this. Table 29, Section III, indicates that 83% of the junior fellows who were active in 1958 and who held the M.D. degree had had at least one year of residency training before undertaking their fellowship studies.

fellowships at the postdoctoral level.* Of those applying for senior fellowships, 30% of the M.D.'s and 61% of the Ph.D.'s had had no support in the past. The fact that 44% of all senior applicants had previously held fellowships does not appear excessive, since several of the programs included in the senior analysis are designed for the further development of persons who have already had the advantage of a junior fellowship experience or its equivalent. The duration of past support was relatively modest—only 3% of junior candidates and 17% of senior applicants had had as much as three years' prior support. Thus the data presented in Table 9 suggest that fellowships are serving as effective instruments for recruitment of new personnel into research and teaching. The number of "professional fellows" may be smaller than has been feared in some quarters. The previous support analyzed was not restricted to that provided by the agencies studied, but included all fellowships shown in the candidates' application forms.

One might expect that candidates for junior fellowships without past fellowship support would be favored in the selection. Table 9 shows no appreciable difference between the acceptability of this group and of those who had held a fellowship for one or two years. However, persons who previously had held fellowships for three or more years were less likely to receive awards. No doubt the reviewing boards felt that such persons already had enjoyed the full advantages of a junior fellowship experience. At the senior level, preference seems to have been given to people who had previously held fellowships for two years. Seventy-five per cent received awards, whereas about 60% of the applicants in other categories were successful.

4. *Ultimate Fields of Interest* (Tables 10-11)

The application forms of many agencies asked the candidates to state the fields in which they eventually wished to make their careers. Our classification of ultimate fields of interest in Table 10 was taken from their responses to this question wherever possible. In some cases, when this information was missing, the eventual field of interest was inferred from other information on the application form.

Clinically oriented candidates and fellows were concentrated in internal medicine or its specialties; about two-thirds of the fellows and more than half of the applicants expressed interest in this field. In parallel fashion, interest in biochemistry and physiology predominated among the future preclinical scientists. About 60% of all awards to persons with preclinical interests went either to biochemists or physiologists.

The reviewing boards approved a larger proportion of the candidates interested in internal medicine than in any other clinical field. Seventy-two per cent of those ultimately intending to work in medicine or its subspecialties were offered and accepted fellowships; the comparable figure for applicants aiming toward all the other clinical fields combined was 53%. There is no evidence that the selection process favored either preclinical scientists or

* Renewal applicants were not considered as having had previous support on the basis of the awards for which they were requesting extension. Thus "previous support" ordinarily implies a separate award from another source. It might in a few instances involve previous support by the current supporting agency if there had been an interval of time between the two awards.

clinicians. Variations in selection ratios within the preclinical fields were minor except for those fields that had a very small representation.

Table 10 also shows the distribution of senior and junior awards according to the fellows' ultimate fields of interest. Forty per cent of the junior awards, but scarcely more than 30% of the senior fellowships, went to persons who expressed an interest in a clinical field.

Those who held the Ph.D. degree alone naturally were concentrated in the basic science fields. It is apparent from Table 11, however, that a substantial number of the M.D.'s (nearly 30% of those applying) specified a preclinical field as their ultimate goal. Three fields are prominent in this projected migration of M.D.'s into the basic sciences. These are physiology (11% of all M.D.'s), biochemistry (8%), and microbiology (4%). To a greater extent than any other preclinical discipline, physiology appears to be recruiting from the ranks of the M.D.'s. Slightly more than half of all applicants specifying physiology as their eventual interest held the M.D. degree.

It is clear from Tables 10 and 11 that such clinical fields as psychiatry, obstetrics, public health, ophthalmology, and radiology were represented by very few candidates.

5. *Nature of the Fellowship Experience*

a. *Field of Study Under the Fellowship (Tables 12-17)*

Theoretically, an appealing feature of the postdoctoral fellowship in medicine has been that it offered the clinically-trained fellow an opportunity to extend his background by means of training in the basic sciences. It would be logical to anticipate, therefore, that the candidates who proposed eventually to make their careers in clinical departments in many cases would have elected to serve their fellowships in departments of basic science. There is little indication that this principle was operating effectively in actual practice during 1956-1957. Indeed, there is some evidence to suggest a trend in the opposite direction. For example, it is apparent from Table 12 that the number of candidates wishing to obtain fellowship experience in preclinical departments (48% of the sample) is smaller than the number proposing ultimately to work in preclinical fields (59% of the sample).

Table 12, in which applicants' fields of concentration at various stages in their careers are summarized, provides a rough indication of the disciplinary migrations that took place as they progressed from doctoral studies and other prefellowship work into their chosen fellowship departments. The fields in which they intended ultimately to work are repeated here for convenient reference. The subsequent tables (14, 15, and 16) will serve to clarify the nature of these shifts.

The proposed fellowship departments are analyzed by degree in Table 13. Only 20% of the M.D.'s (139 persons) elected to study in preclinical departments—dramatic evidence of their reluctance to dissociate themselves from their clinical ties, even for a brief period. Moreover, we saw in Table 11 that 194 (28%) of the M.D.'s intended ultimately to make their careers at the preclinical level. This paradox suggests some hypotheses that might be considered as we examine subsequent analyses:

- (1) M.D.'s who expect to make their careers in clinical departments

apparently are unimpressed with the value of research experience in a basic science department.

(2) An appreciable number of the M.D.'s who look forward to careers in the preclinical sciences are failing to take advantage of the opportunity traditionally offered by the research fellowship for exposure to a new milieu.

(3) In some instances, the choice of ultimate field given on the application forms, upon which our analysis is based, may be misleading. The application forms of most agencies pose the question somewhat as follows: "In what field of the medical sciences do you ultimately intend to work?" Without intent to misrepresent his goals, the clinician planning his career in a clinical department might specify a basic science in response to this question if his research interests were oriented in that direction at the time of application.

(4) In part, this may reflect the tendency of some heads of departments to retain their men in their own research programs, rather than to encourage them to seek wider experience.

More than half of the small group of physicians that did venture outside the clinical departments for their fellowship experience chose departments of physiology or biochemistry (Table 13). Such fields as anatomy, microbiology, biophysics, mathematics, statistics and the like apparently held little attraction for the clinically-trained candidate. However, these were not particularly popular fields among the Ph.D.'s, 33% of whom were concentrated in departments of biochemistry or chemistry. Interestingly enough, 10% of the Ph.D.'s requested fellowships to permit them to study in clinical departments. Of the 60 individuals in this category, however, 21 were going into departments of pathology. Probably a number of these held their Ph.D.'s in this field and so were not extending their competence in a new area. These findings should be interpreted in the light of the fact that the group shown in the M.D. column included all who held the M.D. degree, whether or not in combination with other doctorates.

The ultimate fields of all applicants are compared with their choices of fellowship departments in Table 14. These data suggest that the fellowship system is not accomplishing the cross fertilization of disciplines which was its original objective. Of the 522 people who planned careers in clinical fields, only 45 (9%) elected to study as fellows in preclinical departments (hypothesis 1). Only 20 of the 292 future internists and 3 of the 71 surgeons expressed a desire to work in a preclinical department. These results are thought provoking, particularly when it is recalled that this analysis includes candidates for senior as well as junior fellowships. It might be expected that senior fellows would be alert to the advantages of extending their breadth of competence in disciplines other than their own.

The preclinical group as a whole appeared to have somewhat greater mobility than those who planned careers in a clinical field. There was a small interchange among preclinical fields, and 18% of the future preclinical scientists were planning fellowship study in a clinical environment—10% in a department of medicine. Some of these may have been the physicians who planned careers in a preclinical science but had not yet found it possible to sever clini-

cal ties (hypothesis 2). Alternatively, it is possible that many of them will make their future careers in departments of medicine, but will carry out research oriented toward such fields as biochemistry or physiology (hypothesis 3).

We have derived from Table 14 what might be called an "index of immobility." For each discipline the percentages who wished to obtain their fellowship experience in the same field they had chosen for their ultimate careers were as follows:

ULTIMATE FIELD	%
<i>Clinical fields</i>	
Medicine and specialties	86
Neurology and Psychiatry	63
Pathology	66
Pediatrics	74
Surgery	92
All clinical fields combined	89
<i>Preclinical fields</i>	
Anatomy	56
Biochemistry	66
Biology	59
Biophysics	53
Microbiology	36
Pharmacology	76
Physiology	38
Psychology	62
All preclinical fields combined	76

The shifts between prefellowship and fellowship departments shown in Table 15 reinforce the picture of relative immobility, particularly at the clinical level. The fact that 52 more people chose to study in departments of internal medicine than were located there prior to their fellowships probably does not indicate a real shift. It is more likely that a number of people who were serving internships when they applied and could not be classified by prefellowship field chose departments of medicine for their fellowship study.

The percentages proposed to remain in their prefellowship departments for their fellowship experience were:

DEPARTMENT AT TIME OF APPLICATION	%
<i>Clinical departments</i>	
Medicine and specialties	83
Neurology and Psychiatry	53
Pathology	60
Pediatrics	69
Surgery and specialties	85
All clinical departments combined	81
<i>Preclinical departments</i>	
Anatomy	50
Biochemistry	71
Biology	57
Biophysics	49
Microbiology	37
Pharmacology	71
Physiology	58
Psychology	55
All preclinical departments combined	82

Table 16 completes the picture for Ph.D.'s by showing their ultimate goals in relation to the fields in which they received the doctorate. The biochemists were the most stable group. Here our indices of immobility provide a measure of the degree to which the doctorate major coincides with the ultimate field of concentration. The percentages electing to remain in their Ph.D. field for their ultimate careers were:

FIELD OF PH.D.	%
Anatomy	61
Biochemistry	92
Biology	61
Biophysics	67
Microbiology	75
Pharmacology	75
Physiology	71
Psychology	82

The apparent mobility of those who took the Ph.D. in biology probably is a function either of departmental organization or definition of fields.

Table 17 shows the fellowship departments selected by successful candidates in comparison with those chosen by all applicants. Just as internal medicine was by far the most popular field of ultimate interest among clinically oriented candidates, so it was the field in which a large majority chose to work as fellows. Forty-five per cent of the M.D.'s selected departments of medicine as the locale for their fellowships. Apparently the selection process accentuated this trend, since three-quarters of the candidates who chose departments of internal medicine were awarded and accepted fellowships. This contrasts with a 58% acceptance rate for surgery, 57% for pediatrics, 49% for neurology and psychiatry and 38% for radiology. (These percentages are based on small numbers of applications except in the field of internal medicine.)

There is no evidence that the reviewing boards had favored either preclinical or clinical fields. Within the preclinical fields there is less variation in the rate of acceptance. Bacteriologists, and possibly anatomists, seem to have slightly less chance of favorable action than do candidates from other preclinical fields.

b. *Geographic Locations* (Table 18-19)

From time to time, there has been criticism of the geographic distribution of fellowship awards. Analysis of the geographic locations in which applicants wanted to work as fellows shows a natural tendency to congregate in areas where the medical schools were located (Table 18). However, the degree of concentration does not appear excessive. Moreover, there is no clear evidence that the reviewing boards discriminated against persons wishing to work in any one area. Those selecting institutions in the North Atlantic states received no more than their proportionate share of awards. There was a slight tendency to favor candidates who chose the New England states and the Northwest Central states (76% of the applicants accepted in each case).

Of those proposing to work outside the United States, 52% were awarded and accepted fellowships, as compared with 66% for the entire sample. This may indicate that the reviewing boards are conservative about sending young scientists abroad unless they are satisfied that the proposed program in the foreign laboratory will make a real contribution to the scientific de-

velopment of the individual. Alternatively, we might infer that there is a tendency for a few who are not as well qualified as the average candidate to be attracted by the prospect of a stay overseas. In either case, it does not appear that fellowships were being used as a device to support travel abroad without good scientific purpose.

Another theoretical advantage claimed for the fellowship mechanism, in addition to the opportunity for crossing the boundaries of the scientific disciplines, has been the opportunity that it offered the young scientist to experience new cultural environments through a change of locale. Some agencies have indicated in their announcements that preference would be given to those who planned to go into new institutions or new departments. An analysis of the degree to which candidates and fellows proposed to change their fellowship locale is presented in Table 19. Renewal appointments were included in this table, but were analyzed from the standpoint of the situation at the time of original application. The tendency of persons requesting renewal to remain in the same locale therefore did not distort the picture.

In practice it would appear that preference is not given to junior candidates who are moving to new locations. At the senior level, there is some indication that the reviewing boards favored those moving into new departments. In general, factors other than mobility would seem to have taken precedence in the selection process.

The over-all geographic mobility at the junior level is reasonably good. Apparently geographic shifts are easier to accomplish than are intellectual ones! Sixty-six per cent (722) of the 1,095 junior applicants proposed to change either their departments or institutions. Of these, 642 (59%) were actually changing their institutions, while only 312 (28%) were changing their departments. Candidates at the senior level, presumably with greater family responsibilities, were considerably less mobile. Out of 261 applicants at the senior level, 117 were changing institutions and another nine were changing departments within their home institutions. Only half of the senior candidates, compared with two-thirds of those applying at the junior level, were proposing a change of any kind.

At both levels, M.D.'s appeared less inclined to move to new locations than did Ph.D.'s. Nearly half of the physicians and less than a quarter of the Ph.D.'s wished to remain in the same institution and the same department.

6. *Career Goals* (Table 20)

Nearly all of the granting agencies asked candidates to give some indication of their plans for their future careers. Where this question was not specifically asked on the application form, it was often spontaneously offered in correspondence or in letters of reference. The information was compiled and analyzed, and the results appear in Table 20. More detailed data concerning the career goals of fellows will be found in Section III.

SECTION III

A STUDY OF FELLOWS, PAST AND ACTIVE 1939-1940, 1946-1958

A. Method of Study

To describe the present fellowship system and to study its impact upon medical scientists and upon our academic institutions, it was essential to gather information and opinions from those who had held fellowships. Three questionnaires were devised for this purpose (Appendix I, Exhibits 1, 2, and 3).

1. Selection of the Sample (Table 21)

The basis for selecting programs and individuals for inclusion in the study was outlined in Section I (pages 1386 to 1388). Except for the period of time covered, the criteria for inclusion were identical with those applied in selecting the sample of applicants.

The questionnaires were mailed to all who had held postdoctoral fellowships (as defined in Section I) awarded by the twenty-two cooperating agencies during the twelve-year period 1946-1958. The last normal peacetime year, 1939-1940, was included to provide a basis for pre-war comparison. Only three of the agencies concerned were then offering fellowships. The war years were eliminated because the few existing programs were all but inactive in the emergency.

2. Response to the Questionnaire (Table 21)

Fellows who were active at the time of the survey were sent slightly different questionnaires, depending on whether their current appointments were at the junior or senior level. Since a number of the past fellows had held awards in both categories, a single questionnaire was constructed for past fellows at both levels.

Questionnaires were sent to 3,964 fellows, past and active, junior and senior. Since 87% of this group replied, it is assumed that the sample is a representative one. The response was:

	Mailed N	Returned	
		N	%
Past fellows	3136	2709	86
Active junior fellows	504	463	92
Active senior fellows	324	289	89
Total	3964	3461	87

B. Description of the Fellowship System

1. Types of Supporting Agencies (Table 21)

The supporting agencies that were listed in Section I (page 1388) were classified in three groups: governmental agencies, voluntary health organizations, and private philanthropic foundations. Slightly more than half of all fellows, past and active, had received their awards from governmental agencies. Just over one-quarter were supported by the voluntary health agencies, and nearly 30% by the private philanthropic foundations. The slight overlap (10%) represents those who had held fellowships under more than one type of agency.

2. Levels of Support (Table 21)

The number of active junior and senior fellows in each support category also is shown in Table 21. Since the questionnaire was issued in the Fall of 1957, and responses came in during several ensuing months, this essentially represents the 1957-1958 sample of fellows. For this final year of the study, the private philanthropic foundations were considerably more active in the senior fellowship field than in the junior postdoctoral area. They were supporting 64% of the senior fellows, as compared with 18% of the junior fellows. Government, on the other hand, was sponsoring only one quarter of the more advanced awards, while providing half of the junior fellowships.

In addition to the 289 senior fellows who were active in 1957-1958, 437 (16%) of the 2,709 past fellows previously had held awards of senior grade. We might define the "long-term" senior fellowship as one that was awarded for three years or more, classifying those initially awarded for one or two years in the "short-term" category. When the 726 past and active senior fellows are divided into these two groups, the breakdown is as follows:

	Past senior fellows	Active senior fellows	All senior fellows
"Long-term" awards	183	188	371
"Short-term" awards	254	101	355
Total awards	437	289	726

This would indicate that "long-term" fellowships, of which there were relatively few in the years immediately following World War II, had shifted into a position of prominence by 1958. The number of people holding such awards in 1957-1958 was about equal to the total number completed in the prior eleven years. As an index of growth, however, this should be carefully interpreted. Once established, a long-term fellowship program will have more fellows actively at work than will a short-term program involving the same number of awards annually.

3. Trend of Growth (Table 22)

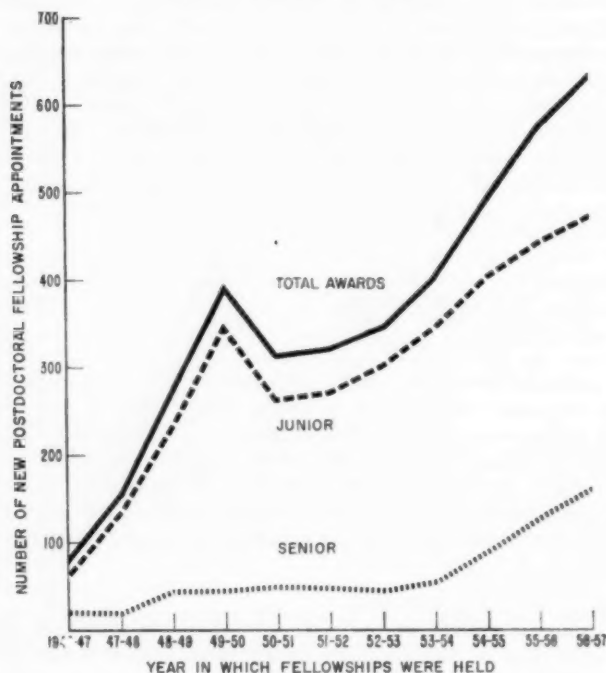
The dramatic growth of our national fellowship structure since World War II was discussed in Section I. In an effort to delineate this growth, the number of fellows active in each successive year of the survey was estimated from the lists of fellows supplied by the agencies. An exact count was precluded by the form in which the lists were received. Most of the donor agencies furnished lists showing the years in which each fellow served. A few, including the organization that supported the largest number of fellows, reported on the basis of the fiscal year in which the award was made. In such cases, it was assumed that the fellowship was served in the ensuing fiscal year. This procedure admittedly introduced some errors, but it is likely that they tended to be compensating errors.* Despite this difficulty, Table 22 is believed to pro-

* As an example, consider the awards made in the fiscal year ending June 30, 1957, by an agency that reviews applications throughout the year. All of these awards, for purposes of Table 22, were classified as tenable during 1957-1958. The first awards in that fiscal year might have been made in the summer of 1956 and taken up by the recipients late in 1956. These appointments would more accurately have been categorized as 1956-1957 fellowships. The last awards for that year might have been made in the late Spring of 1957 and the starting dates deferred in some cases until early 1958. These should properly have been classified as fellowships held during 1958-1959.

vide a reasonably accurate picture of the trend of growth (except that the count for 1957-1958 was incomplete—see p. 1403). The "growth curve" for the years 1946-1957, based on data from Table 22, is shown in the following graph.

NEW POSTDOCTORAL FELLOWSHIPS IN MEDICAL SCIENCES

Supported Annually by National Agencies
Estimated Number for 1946-1957



"New" fellowships represent initial appointments, and "old" awards usually represent reappointments in the junior category. For the senior fellowships, however, "old" awards include continued tenure of long-term fellowships as well as renewal appointments. Table 22 therefore provides an estimate of the number of active fellows supported by the cooperating agencies from year to year, but not an estimate of the number of awards made in a given year.

From 1946 to 1950, this analysis reflects a rapid and steady growth from year to year. For the next three years (1950-1953), total awards remained relatively constant. However, this plateau cloaked a drop-off in new junior awards, offset in part by continued flow of personnel into the senior fellowship programs which were only then gathering momentum. The Korean War may have been partly responsible for slowing down the influx of younger men into junior fellowships. There also is evidence that the agency with the largest program of junior fellowships at that time diverted some of its funds into certain behavioral

science fields not defined as pertinent to the survey. This factor probably contributed to some extent to the interruption in the growth curve.

From 1952 through 1957, the picture again was one of steady growth at both levels. The apparently sharp drop-off in fellows active during 1957-1958 must be discounted as an artifact associated with the timing of the data collection and the differences in the agencies' schedules for awarding fellowships. This information was compiled as the basis for issuing the questionnaires to past and active fellows in the Summer and Fall of 1957. At that time, the largest of the cooperating organizations had not completed its appointments for 1957-1958. Moreover, a number of fellows had been appointed by the same agency at the time this information was compiled, but had not yet started their fellowship studies. Hence, it would have been inappropriate to send them questionnaires and these 1957-1958 fellows were omitted from the analysis. These data, as well as the analysis of questionnaire returns, are therefore presented with the caution that the sample of 1957-1958 fellows is less complete than those for previous years.

4. *The "Supply" of Fellowships—A Thirteen-year Estimate*

We have examined in detail the "supply" of and "demand" for fellowships for a single year in Section II. It was not feasible to study "demand" (i.e., applications submitted) over the long term, but a thirteen-year estimate of "supply" may be extracted from data already presented.

a. *Number of People Supported*

First, we might consider the supply of fellowships in terms of the number of people who benefited from this kind of training over the entire period of the survey. When the lists of fellows supported by twenty-two national agencies were compared and duplications eliminated, there was revealed a net postdoctoral fellowship population of nearly 4,000 persons for the agencies studied over the thirteen-year period. In view of the sources of this information and the exclusions already described, this is a conservative estimate of the *number of people* who received fellowship support in the medical sciences in nation-wide competition over these years. This figure should not be confused with the number of appointments made by the cooperating agencies nor with the number of years of fellowship support they provided over the entire period. Many of the almost 4,000 individuals received fellowships from two or more agencies during this period, and a few even received more than one kind of appointment from the same agency. Terms of support also varied widely, both with respect to the number of years for which the original award was made and the number of renewals granted.

b. *Number of New Appointments Made (Table 22)*

A total of almost 4,500 *new* appointments were made to the nearly 4,000 fellows whose names were provided by the supporting agencies. Of these, more than 3,600 were junior fellowships, and about 860* were senior awards.

c. *Number of "Fellowship Years" Represented (Table 22)*

The number of years of fellowship support provided for this group of

* This disagrees with the table on page 1401 because the latter refers only to the fellows who responded to the questionnaire.

about 4,000 people probably constitutes a more meaningful gauge of the "supply" of fellowships than does the number of awards. As indicated by the totals in Table 22, it is estimated that the 4,000 fellows had served more than 7,300 "fellowship years," and that by 1956-1957 the number of man years served annually had climbed to more than 1,000.

5. *Duration of Support Granted Individual Fellows* (Table 23)

Fellows were asked to indicate on the questionnaire not only the length of their past fellowship appointments, but also the number of years for which their present awards were made. The questionnaire did not limit the response to this particular question to the national programs. Some institutional fellowship support probably is included, as well as awards from other agencies not covered by the survey. It is clear that one- and two-year terms are the general rule for junior fellows. The preponderance of three- and five-year awards to senior fellows is more striking for current appointments than for completed awards.

6. *Multiple Sources of Support for Individual Fellows* (Table 24)

Analysis of successive awards to junior fellows from more than one agency indicates that only 3% of the sample (113 people) had been supported by three or more agencies. Senior-level awards are not included in Table 24, although the reports of active senior fellows on their past junior fellowships are represented. The degree to which individuals had received multiple support appears larger here than had been inferred from Table 22. The two tabulations are not comparable, since Table 22 is limited to support by the 22 cooperating agencies, whereas Table 24 includes fellows' reports on all postdoctoral fellowship support from any source.

7. *The Potential "Demand" for Fellowships* (Tables 25-26)

To secure some rough indication of the potential demand for fellowships, past fellows were asked whether they would like additional fellowship support at any time in the future. Active junior and senior fellows were asked whether they would like to continue on fellowships at the end of their present appointments, and for how many years (Table 25).

Almost half of the past fellows were interested in further fellowship support. Of the active junior fellows, 38% were planning to request reappointment. Only 16% of the senior group wanted to continue as fellows beyond the span of their current appointments.

Junior postdoctoral fellowships held little attraction, as compared with senior fellowships (Table 26). Greatest interest was expressed in the long-term senior awards—about half (682) of the past fellows who wanted further fellowship aid specified this kind of support. An appreciable number preferred sabbatical or exchange fellowships (352 or 27%).

Ph.D.'s and M.D.'s among past fellows reacted quite differently to this question (Table 26). Whereas only 39% of the M.D.'s wanted additional fellowship support, 67% of the Ph.D.'s were attracted by the idea of resuming fellowship status. Long-term senior awards were most attractive both to M.D.'s and to Ph.D.'s. In the light of the acceleration of these programs during the late 1950's, it is obvious that the bulk of the past fellows had only recently completed their terms. Thus this "potential demand" for additional

fellowships appears to be based in large measure on the desire of recent junior fellows to round out their preparation through senior fellowship experience.

8. Characteristics of the Sample—Backgrounds of Past and Active Fellows

a. Education (Table 27)

The ratio of physicians to Ph.D.'s in our sample of past and active fellows was as follows:

	Past fellows	Active junior	Active senior	Total
M.D. (or M.D. plus Sc.D.)	58	55	59	58
Ph.D. or Sc.D.	35	43	32	36
M.D. plus Ph.D.	7	2	9	6
Total	100	100	100	100
Total fellows	(2709)	(463)	(289)	(3461)

The fact that nearly two-thirds of the fellows held the M.D. degree is consistent with the way the sample was selected, since the programs studied were those of paramount interest to physicians. Moreover, the population from which the sample was drawn—primarily those who had earned doctorates in biology and medicine during and since World War II—was heavily weighted with M.D.'s. The medical schools in the United States had graduated between 5,000 and 7,000 persons annually (in round numbers) during the period 1941-1957¹. The rate of production of doctorates in the biological sciences in the same period had varied between about 300 and 1,650 per annum².

Against the above background, it is interesting to note from Table 27 that the balance between M.D.'s and Ph.D.'s had shifted appreciably during the period of the survey. Those who undertook their first postdoctoral fellowships during World War II or within three years thereafter had the highest percentage of M.D.'s and the proportion of physicians declined in each subsequent three-year period. Three-quarters of those who began their fellowships in 1951 or earlier held the M.D., whereas only 56% of those who began their fellowships in the last six years of the study were physicians. The shift perhaps reflects the rapid increase in number of Ph.D.'s in the biological sciences granted annually in the late 1940's and early 1950's. (The number dropped from about 700 annually in 1940 to around 300 in 1945, then increased steadily to an annual rate of nearly 1,650 in 1954³.) The growth of programs in medical areas of special interest to Ph.D.'s (such as cancer research) may also have played a part.

The fact that active junior fellows were less likely than past fellows to hold two doctorates probably is associated with the time factor. For past fellows, these were the degrees they held in 1958, rather than when they were fellows. A majority of the fellowship alumni served only at the junior level, and some of them undoubtedly acquired the second doctorate after they had completed their fellowships.

* Figures for 1957 furnished by Dr. L. R. Harmon, Director of Research, Office of Scientific Personnel, National Academy of Sciences-National Research Council.

¹ Wiggins, Walter S., Leymaster, Glen R., Taylor, A. N., and Tipner, Anne. Medical Education in the United States and Canada. J.A.M.A., 174:1446, November 12, 1960.

² Trytten, M. H., and Harmon, L. R. Doctorate Production in United States Universities, 1936-1956. Publ. 582, National Academy of Sciences-National Research Council, Washington, D. C., 1958, p. 6.

³ Ibid.

b. Sex (Table 28)

Eight per cent of the entire group (but only 3% of the active senior fellows) were women. They held the Ph.D. more often than did the men. The percentages by sex for past and active fellows combined were:

DEGREE	Men	Women
M.D.	59	44
Ph.D. or Sc.D.	34	53
Both	7	3
Total	100	100
Total fellows	(3199)	(262)

c. Clinical Training (Table 29)

Fellows who were physicians were asked to describe their clinical experience. Nearly all of them had served internships, and the majority had had some residency training. Their clinical experience is summarized below:

Per Cent of Total Who Had Served:	Past	Active junior	Active senior
Internship	97	96	94
Residency	88	83	85
Three years or more of residency	47	33	52
Total fellows	(1760)	(262)	(195)

The status of the fellows holding the M.D. with respect to specialty board certification was as follows:

	Past	Active junior	Active senior
Per cent already certified	48	9	45
Per cent planning certification	33	74	30
Total per cent certified or planning certification	81	83	75
Total fellows with M.D.	(1760)	(262)	(195)

We cannot assume that all of the training reported by past fellows was acquired before the fellowship period. Extrapolating from the experience of active fellows, however, it appears probable that most of the physicians among the past fellows had served as interns and spent a year or more as residents before receiving postdoctoral fellowships.

Although most of the active junior fellows planned eventually to seek specialty board certification, less than one in ten had completed board requirements before beginning the fellowship. When we consider that one-third of this group had completed three years or more of residency training, the proportion already certified appears small, particularly in comparison with the status of past fellows. Presumably this reflects the increasing stringency of board requirements. Some boards permit substitution of a year of research for one of the clinical years required for certification. Data are not available, but it would be interesting to know how many of the active fellows in 1958 have since received credit toward certification for their research experience as fellows.

(1) *Residency Field* (Table 30)

The fields in which fellows had served residencies appear in Table 30. Half of all physicians among the fellows, past and active, were trained in medicine or its subspecialties. Less than 15% were surgeons. Pediatrics and

pathology together accounted for another 14%; neurology and psychiatry for 5%. This information takes on meaning when it is compared with data provided by the American Medical Association on the number of residencies in the various clinical fields. The following table shows the percentage distribution of active fellows by previous residency fields, and the distribution of all residents in approved positions on September 1, 1958:

FIELD OF RESIDENCY	1958 Fellows*	1958 Residents*
Medicine and specialties	60	21
Obstetrics and Gynecology	2	9
Pathology	5	7
Pediatrics	12	6
Psychiatry and Neurology	4	12
Radiology	2	5
Surgery and specialties	14	33
Other fields	1	7
Total	100	100
Total residents	(385)	(26,706)

Internal medicine, the specialty field of 60% of these physician fellows, accounted for only 21% of the approved residencies filled during 1958 in the United States.

The orientation of internists toward the fellowship as a means of preparation raises some interesting questions. Does it follow that internal medicine is contributing more than its share of personnel to the total research effort? Why is surgery (a more populous field) represented by only one-quarter as many fellows? Why do specialists in other areas receive fellowships so infrequently? Psychiatry and neurology, radiology, public health, and obstetrics and gynecology are cases in point. The data presented in Table 10 (Appendix II) suggest (1) that persons from these fields do not seek fellowships as frequently as do internists, and (2) that the disparity is increased by the selection process, but that the latter is not a major factor.

(2) *Effects of Clinical Training* (Tables 31-32)

The clinicians then were asked about the effects of their clinical training on their fellowship experience and on their careers. Their responses to the question about its influence on their career plans are shown in Table 31. Some 14%, through their clinical experience, had been attracted to an academic career in the basic sciences, and an equal number to one combining the basic and clinical sciences. Slightly more than half said that their clinical experience had influenced them in the direction of an academic career in a clinical field. About 15% said that it had created a definite interest in the full-time practice of medicine. The fellows' evaluation of the effect of the clinical experience on their fellowship research is shown in Table 32.

d. *Academic Experience* (Table 33)

Information was obtained from active fellows about the academic positions they had held before undertaking their fellowships. Only 23% of the junior

* These percentages are based on data for active junior and senior fellows in Table 30. They are not consistent with the percentages in Table 30 because they were computed against the number of fellows who had served residencies, rather than the total number holding the M.D. degree.

¹ Nunemaker, John C., Hinman, John, Thompson, Willard V., and Neitzel, Helen. Graduate Medical Education in the United States. *J.A.M.A.*, 171:670, October 10, 1959.

fellows had previously held full-time university positions, compared with more than 80% of the senior fellows. Two-thirds of the active senior fellows had served at the rank of assistant professor or above.

9. *Nature of the Fellowship Experience*

a. *Teaching Experience* (Tables 34-35)

Some senior fellowship programs, such as the Markle Foundation's Grants for Scholars, include teaching as an integral part of the fellowship experience. It is not surprising, therefore, to find that the active senior fellows were making a major contribution to the teaching effort (see Table 34). Half of them were carrying a considerable responsibility for teaching, and only 17% were entirely free of teaching duties. Most of their teaching (80%) was a part of the primary lecture schedules of their departments.

The theory of the junior fellowship in general has been to relieve the fellow of other duties, freeing him to do research and extend his basic competence. For this reason, reviewing boards have tended to look askance at the inclusion of considerable teaching in the fellowship program at the junior level. Therefore the extent of participation in teaching reported by active junior fellows was greater than had been expected. Less than half were wholly divorced from teaching, and 9% participated to a considerable extent in the teaching programs of their host institutions. Forty-five per cent of the junior fellows who were engaged in teaching were taking part in the primary lecture schedule.

Of the past fellows, almost 60% had done at least a little teaching and 15% had carried major teaching responsibilities during the tenure of their fellowships.

According to Table 35, it has been the physician, more often than the Ph.D., who has elected to combine teaching with his experience in research. At least a minimal amount of teaching was reported by 77% of the M.D.'s compared with 29% of the Ph.D.'s. Moreover, 21% of the M.D.'s and only 4% of the Ph.D.'s said they did considerable teaching as fellows.

It may be assumed that this participation in teaching represents a free choice on the part of the fellows, rather than a duty imposed by the departments in which they served. This is attested, not only by the latitude generally afforded the fellow to choose his own program and milieu, but by the satisfaction fellows expressed over the value of the teaching experience (see page 1412).

b. *Academic Course Work* (Table 36)

About one-quarter of the fellows enrolled in formal courses during the tenure of their fellowships. The basic science fields in which these courses were taken are analyzed in Table 36. Chemistry and biochemistry were the most popular subjects. Nearly 46% of those who enrolled in courses took at least one in this area. Mathematics and physics were almost equal in their attraction, with 39% participating. The biological sciences were a little less popular.

A larger percentage of the M.D.'s than of Ph.D.'s took academic work, and the fellows who held both doctorates participated even more often in formal courses. This may mean that some of them worked toward the second doctorate during the tenure of the fellowship. Physicians undertook more

courses in the physical sciences than did Ph.D.'s, but were less likely than the Ph.D.'s to enroll in one of the biological sciences.

Present junior fellows were asked whether they were working toward a degree under their fellowship. Thirty-three, or 7%, indicated that they were. Of these, 25 were registered as candidates for the Ph.D., and six were working for M.Sc. degrees. One fellow was working toward the M.D. and another toward the Sc.D. degree.

C. Evaluation of the Fellowship System

1. Contributions Being Made by Past Fellows

a. Their Present Positions (Tables 37-40)

To what extent are those who have had the benefit of fellowship training contributing to the education of a new generation of scientists? Has the present fellowship system with its emphasis on full-time concentration upon research led these men away from the classroom and into the laboratory? Part of the answer is to be found in the present positions held by past fellows.

Past fellows were asked to describe their positions by checking as many of the following types of institutions as were applicable to their own situations:

Medical school	Industry
Other division of university	Federal Government
Hospital	Private practice of medicine
Research institute (nonindustrial)	

The positions held by the past fellows were categorized on the basis of the institutions or combinations of institutions indicated. For example, the man who checked "medical school" and "hospital" but not "private practice of medicine," was classified in full-time academic medicine. If he checked all three, he was considered as holding a part-time academic appointment. This approach was adopted because previous experience with questionnaire studies had demonstrated the difficulty of interpreting answers to direct questions concerning full-time versus part-time participation in academic medicine.

The positions of past fellows, analyzed in detail in Table 37, are summarized below:

<i>Academic Positions</i>	N	%
In medical schools:		
Full-time	1089	40
Part-time	412	15
Total in medical schools	1501	55
Outside medical schools:		
Full-time	281	10
Part-time	19	1
Total outside medical schools	300	11
Total in academic work	1801	66
<i>Non-academic Positions</i>		
Hospital	77	3
Research	72	3
Private practice	194	7
Industry	61	2
Government	153	6
Other	351	13
Total not in academic work	908	34
Grand Total	2709	100

The group classified as holding "other" non-academic positions contains 257 people who were still on fellowships or had returned to fellowship status at the time they completed the questionnaire. Only 22 in that category had left professional work because of illness, retirement, or, in the case of a few women, family responsibilities.

From the fact that half of all past fellows (1,370) were in full-time academic life and two-thirds (1,801) had at least a part-time university appointment, we may infer that the post-war fellowship system has served our academic institutions reasonably well. The present data are closely parallel to those compiled in 1952 for the NRC Fellowships in the Medical Sciences—a program specifically designed to prepare future medical school faculty members. At that time 70% of past NRC Fellows were in academic positions and about 3% in full-time practice.⁵

M.D.'s and Ph.D.'s appeared to be contributing equally to medical education, in terms of the percentages holding full-time appointments on medical school staffs (see Table 37). Another sizeable group of M.D.'s devoted part of their time to academic pursuits in the medical schools, and an approximately equal proportion of Ph.D.'s were located in graduate schools and other divisions of the universities. Combining part-time and full-time academic positions, about two-thirds of each group were serving on university staffs. Those who held both degrees were even more concentrated (75%) in academic work. Of the M.D.'s, 12% had entered full-time private practice, and another 4% were in full-time hospital work. To balance this, the Ph.D.'s to a greater extent than M.D.'s had gone into industry, research institutes, and Government.

Table 38 shows the academic ranks reported by past fellows. Fifty-six per cent held the conventional academic titles, from instructor to professor or department head. There is an apparent inconsistency with Table 37, which indicates that 66% held academic positions. A few (3%) failed to specify their ranks, but most of the additional 10% fell in the "other ranks" category which included research directors, research associates and assistants.

In Table 39, the ranks achieved in 1958 by M.D.'s and non-M.D.'s among the past fellows are compared, according to the year in which they first received fellowship support. This provides a rough breakdown by age and seniority. It would indicate that the Ph.D. may be in a position to command a higher rank somewhat earlier in his post-fellowship career than does the M.D. For example, 38% of the Ph.D.'s who began their fellowships in 1955 or later were assistant professors or higher by 1958, whereas only 12% of the M.D.'s in this category had progressed beyond the rank of instructor. The M.D. sometimes delays his entrance into university life by returning to clinical training, as did 12% of the physicians among 1955-1958 fellows. This may account in part for the fact that physicians are a little slower to achieve academic recognition in terms of rank.

Junior and senior fellows are compared from the standpoint of their 1958 positions in Table 40. The contributions being made by past senior fellows to academic life appear substantial. Seventy-nine per cent held academic posts, compared with 66% of the junior fellows. The fact that a smaller

⁵ Bowen, Lois G. Subsequent Careers of Applicants for Postdoctoral Medical Research Fellowships. *J.A.M.A.*, 152:693-697, June 20, 1953.

proportion (53%) of those who had held both junior and senior fellowships had gone into academic life probably is associated with the classification of more than one-third of this group in the "not applicable" category. This meant in most cases that they were still serving as fellows.

b. Fields of Interest (Table 41)

The first section of Table 41 shows the distribution of past fellows holding full-time university appointments according to their academic departments and degrees. This sample is almost evenly divided between M.D.'s and Ph.D.'s, and between clinical and preclinical departments.

About 86% of the M.D.'s were serving in clinical departments. Following the pattern of their residency training (Table 30), nearly half were concentrated in departments of internal medicine. Surgery, pediatrics, and pathology each had claimed approximately 10% of the physicians. The remaining 20% were spread through the other clinical and the preclinical disciplines.

The Ph.D.'s in academic life were equally concentrated in preclinical departments. Departments of biochemistry had attracted 30% of past fellows with the Ph.D., biology and zoology 18%, microbiology 11%, and physiology only 8%.

The second section of Table 41 deals with the fields in which past fellows who did not hold full-time academic positions were working. Almost half of the members of the sample (the "non-applicable" category) were in government service, internships, fellowships, private practice or other positions not readily categorized by departments or disciplines. Those who could be identified with specific fields, including residents and those holding research positions, were predominantly physicians. Forty per cent of the 996 M.D.'s held part-time academic appointments (see Table 37).

The final section summarizes the departmental distribution of the entire sample of past fellows. If we set aside the group that cannot be classified by departments, or did not respond, we find that 60% of the fellows were concentrated in the clinical area. This is roughly in proportion to the ratio of physicians in the sample. Indeed, Table 41 reinforces the impression of disciplinary immobility gained from the study of applicants (Section II), in the sense that few physicians were making their careers in the basic sciences and vice versa.

2. The Fellow's Evaluation of the Fellowship Experience

A number of questions were designed to elicit the fellow's reactions to various phases of his fellowship experience.

a. Its Value to His Career

Past fellows were asked whether the fellowship had given them an advantage in the competition for permanent career positions. Eighty-four per cent (2,269 people) replied that it had. On this point, M.D.'s and Ph.D.'s were agreed.

b. The Timing of the Award

When asked whether the fellowship was taken at the optimum time in their careers, 2,232, or 82% of the past fellows, replied in the affirmative. Again, physicians and Ph.D.'s reacted similarly.

c. Duration of the Fellowship (Tables 42-43)

Information on the duration of the fellowship terms at the junior and senior levels already has been presented (Table 23). When asked whether the terms of their fellowships were long enough to accomplish their purposes, 70% of the past junior fellows replied that they were (Table 42). Another 20% said they had cut short their terms because they found it necessary to seek positions. Only 8% were dissatisfied with the length of their terms for some other reason. Presumably these were people who were ineligible for reappointment or whose applications for renewal had been rejected.

As the length of the term increased, the proportion of junior fellows who found their terms adequate also increased. This was not true at the senior level, probably because senior fellows in applying had selected long-term or short-term fellowships in accordance with their own needs and desires.

An analysis not presented showed that M.D.'s and Ph.D.'s enjoyed approximately the same duration of support at the junior level and that both groups were increasingly satisfied as the term was lengthened. Table 43 shows the general level of satisfaction for physicians and Ph.D.'s and indicates that the differences between the two groups were minor.

d. Value of the Teaching Experience

The extent to which fellows had participated in the teaching activities of their departments has been discussed (page 1408). The unexpectedly high incidence of teaching experience, undertaken voluntarily and in the face of a negative attitude on the part of some sponsoring agencies, indicated that the fellows had a real appreciation of its importance.

When they were asked whether their teaching experience had been beneficial, 1,782 or 85% of the 2,107 past and active fellows to whom the question applied reacted favorably. M.D.'s and Ph.D.'s in the same proportions had found their teaching experience helpful. Among past fellows, even those in nonacademic posts recognized its value. For example, 74% of those in private practice and 94% of those in Government who had had teaching experience as fellows regarded it as beneficial.

The next question invited a negative reaction: "If there was no teaching experience, or if it was minor, haphazard or unsupervised, do you consider this a disadvantage that should have been corrected to improve your preparation for the future?" Of the 2,076 fellows who replied, 848 (41%) said that they did consider this a disadvantage.

The wording of the latter question was such that some fellows could consistently answer both questions. Nearly 800 of them did so. Out of this group, 351 answered both questions in the affirmative. This means that about 20% of the 1,782 persons who said their teaching experience during the fellowship had been helpful, also thought the situation could have been improved. Presumably these were people who felt they had derived some benefit from the minor or unsupervised teaching they had done, but that the experience would have been more valuable if it had been better planned and supervised or if there had been opportunity to spend more of their time in teaching.

e. Value of the Formal Course Work (Table 44)

The formal course work taken by fellows as part of their fellowship experience is shown in Table 36. Ninety per cent of the past and active fellows

who had taken formal academic courses felt that this aspect of their training had been beneficial.

A second question was asked of those who had been excluded from this experience: "If your fellowship did not permit you to enroll in such courses, do you feel that it should have been permitted?" The responses, broken down by degrees, appear in Table 44. A little over half of those who were not permitted to take courses felt that this would have been desirable. There was no difference between the reactions of M.D.'s and Ph.D.'s among the past fellows on this point. Among active fellows, particularly at the junior level, a larger proportion of the M.D.'s than of the Ph.D.'s felt the need for supplementation of their academic backgrounds.

The courses in which these fellows would have enrolled, had this been permissible under the terms of their appointment, also are shown in Table 44. The interest in the basic sciences reflected by these choices is striking, particularly the orientation of fellows toward such subjects as mathematics, physics and biophysics. Among those who were not permitted to enroll in formal courses, 42% specified courses in these areas, a proportion equal to the percentage expressing interest in chemistry and biochemistry. A larger percentage of those who held the M.D. recognized their need for background in the physical sciences. This is an interesting reaction on the part of the current generation of clinically-trained fellows, which may reflect a growing appreciation among young M.D.'s of the importance of a thorough grounding in the basic sciences. On all these points, the desires of those who were barred from formal academic work were parallel to the actual choices of subjects by those who were permitted to enroll in formal courses (see Table 36).

f. Problems related to Publication of Results

The original concept of the postdoctoral fellowship placed the fellow under no obligation to contribute to science in a tangible way at this early stage in his career. Two questions were designed to explore whether fellows believed they were under any pressure to demonstrate their accomplishments in terms of concrete publications. Twenty-two per cent (767) of all past and active fellows said they felt pressure (other than self-imposed) to publish the results of their fellowship research. Active senior fellows replied in the affirmative a little more frequently than the others (32%).

Past fellows and active senior fellows were given a chance to indicate what factors, if any, they felt had handicapped them in preparing the results of their fellowship research for publication. (Active junior fellows were not asked these questions, since it was assumed that most of them had not reached this stage in their efforts.) The factors listed, and the number and percentage of the 2,998 past fellows and active senior fellows who said they were handicapped by them in preparing their results for publication, were as follows:

	N	%
Lack of time	601	20
Lack of adequate expert consultation	305	10
Difficulty with the technique of formulating a written presentation	573	19
Course work in composition, literature, or methods of writing would have been of value	982	33

These replies, of course, involved considerable duplication. Almost half (1,461)

of the 2,998 fellows to whom this section was directed did not respond or answered in the negative, implying either that they had not felt handicapped in preparing their reports, or that they had not attempted publication.

g. Effect of the Fellowship on Their Career Goals (Table 45)

A final series of questions was designed to evaluate the impact of the fellowship experience on the fellows' goals for their careers. Again, active junior fellows were not asked these questions. Almost three-quarters of the fellows said that the fellowship experience had confirmed their dedication to research, whereas 4% (1% of the senior fellows) said that the fellowship had influenced them to leave the field of research. Sixty-five per cent of past fellows and 72% of active senior fellows said that the fellowship had influenced them toward careers that combined research with other academic responsibilities.

D. Fellows as a Potential Pool of Academic Personnel

1. Their Career Goals (Tables 46-51)

As one part of the effort to study the impact of fellowships on academic institutions, particularly the future supply of teaching personnel, past and active fellows were asked to indicate their career preferences. The question was divided into two parts. Fellows were asked first to specify their primary choices for their careers, setting aside economic considerations entirely. Next they were asked for their career choices under present-day economic realities. Their answers are reported according to their degrees in Tables 46 and 47.

If economic rewards were equal (Table 46), almost 60% of all past fellows said they would prefer full-time university positions that provided a good balance between research and the other responsibilities of academic life. Ph.D.'s naturally were somewhat more oriented toward such full-time university careers than were M.D.'s. Three-quarters of the Ph.D.'s, as compared with half of the M.D.'s, among the past fellows indicated this preference. However, when the M.D.'s who indicated interest in "geographic full-time" positions* are included, the percentages of M.D.'s and Ph.D.'s attracted by academic life are comparable. Interest in full-time private practice was negligible (3% of the M.D.'s).

Active junior fellows with the M.D. degree were more inclined toward full-time university positions, and a little less interested in full-time geographic positions than were their counterparts among the past fellows.

The M.D.'s among the active senior fellows reacted very much as did the Ph.D.'s, with 73% indicating an interest in full-time university positions. Only 15% said they would prefer geographic full-time positions. Clearly, the active senior fellows were strongly oriented toward academic medicine if economic considerations were set aside. However, they were not questioned about their interest in private practice, and so we must qualify any conclusions based on comparison with the physicians in other groups.

Considered in the light of economic realities (Table 47) 60% of the fellows, past and present, would choose either full-time academic or geographic

* This option was phrased "clinical investigation and medical practice in a full-time academic position."

full-time positions. This compares with the 77% of the entire group indicating one of these alternatives if economic rewards were equal. Among past fellows, an equal proportion (57%) of M.D.'s and Ph.D.'s chose such careers, representing a drop-off of approximately 20% for both groups.

About 11% of the M.D.'s and about 21% of the Ph.D.'s among the past fellows would select full-time research as a career if economic rewards were equal. This dropped to 6% for M.D.'s but increased to 28% for Ph.D.'s when the question was revised to take account of economic factors. Active junior and senior fellows exhibited a somewhat similar shift of interests, but appeared a little less interested in devoting their time exclusively to research, regardless of their degrees or the conditions of remuneration.

Does the fellow who continues for several years on extended junior fellowships or as an advanced fellow become less and less interested in teaching and more dedicated to a career in research alone? The above reactions of the past senior fellows, who as a group had longer terms than the junior fellows, would not suggest that this is the case. The career preferences of past fellows also were analyzed according to the duration of the fellowship experience. These data are omitted because they provide no evidence that the length of postdoctoral support bore any relationship to career choices.

The lure of full-time private practice was not as strong as might have been predicted. Among past fellows, the proportion that elected this alternative increased from 3% to 17% of the M.D.'s when economic reality was considered. It increased from 3% to 11% for active junior fellows.

To assess the relationship between economic factors and the career choices of past fellows, the responses to the two questions were compared. The results in terms of raw numbers appear in Table 48. These data indicate the extent and direction of the shifts attributable to economic considerations. Summarizing a portion of Table 48, the career choices made by past fellows in the light of economic reality are expressed below as percentages of their choices if economic rewards were equal:

CAREER CHOICES UNDER PRESENT ECONOMIC REALITIES	CAREER CHOICES, ECONOMIC REWARDS BEING EQUAL				
	Full-time university	Full-time research	Geographic full-time	Full-time practice	Total
<i>M.D.</i>					
Full-time university	52	21	1	-	29
Full-time research	2	37	1	-	6
Geographic full-time	20	20	50	-	28
Full-time practice	8	7	30	81	17
All other careers	18	15	18	19	20
Total	100	100	100	100	100
Total past fellows holding M.D. only	(772)	(179)	(440)	(53)	(1576)
<i>Ph.D.</i>					
Full-time university	69	15			55
Full-time research	17	67			28
All other careers	14	18			17
Total	100	100			100
Total past fellows holding Ph.D. only	(709)	(202)			(949)

The foregoing tabulation shows that the number of physicians who would have chosen full-time university positions if remuneration were equal was cut

almost in half when economic factors were considered, whereas less than one-third of the Ph.D.'s who originally preferred university careers indicated a change in preference in light of reality. However, the physicians in this group would shift their preference primarily to geographic full-time positions, so that nearly three-quarters would stay in full-time academic life regardless of economics. The principal shift for Ph.D.'s preferring academic posts was into full-time research.

Among the Ph.D.'s who initially said they would prefer full-time research positions, two-thirds held to their original preference in the light of economic realities. Scarcely more than one-third of the M.D.'s who ideally would have preferred full-time research selected this career under present-day economic conditions. Most of the others would shift into full-time university posts or into full-time geographic positions.

Half of the past fellows already were in full-time academic life (see Table 37). Obviously it is the career preferences of the remaining 50% that must be examined if we are to identify a potential pool from which additional academic personnel might be recruited. Table 49 therefore is arranged to show the career preferences of past fellows (under present-day economic conditions) according to the positions they held. Of the 1,339 past fellows who were not in full-time academic positions, 553 or about 40% said they would prefer full-time university posts (either salaried or geographic full time). The positions held by these 553 past fellows and their career choices were as follows:

POSITION IN 1958	Preferred full-time university posts	Preferred geographic full-time posts	Total preferring full-time academic work
Part-time academic	83	109	192
Hospital and/or research	36	32	68
Full-time practice	7	27	34
Industry	12	1	13
Government	35	9	44
Fellowship*	118	64	182
Other positions	11	9	20
Total	302	251	553

Quite logically, the group that has remained on, or returned to, fellowship status constitutes a primary source of recruitment. Part-time medical school personnel also give promise of making a substantial contribution on a full-time basis. To counterbalance this, Table 49 shows that nearly 20% (263) of those working in full-time academic medicine indicated that another type of position would be more attractive to them. This potential attrition could offset in part the possibilities for recruitment.

It should be noted that 215 past fellows, not then in full-time academic work, preferred full-time research without teaching or other responsibilities. Theirs of course is a vital contribution, and many of them probably wanted to work in an academic setting. They were omitted from the above analysis because its objective was to identify a pool of persons available for recruitment who were willing to assume all the responsibilities of faculty posts.

Further clarification of the interest of past fellows in academic careers is found in their answers to the following question: "If you are not now in a full-time academic staff position, would you consider such an appointment

*Includes a few who were out of professional work.

if it assured an acceptable balance between research, teaching and administrative duties?" Table 50 presents the responses of past fellows, analyzed by their present positions. When the 249 people already in full-time academic work are eliminated, there remain 818 people in other types of positions who would consider academic posts under this condition. In other words, 61% of all past fellows not in full-time academic work were open to consideration of such a career. (This is a larger group than the 553 potential recruits identified above because the present question could consistently be answered in the affirmative by some who indicated another career as their first choice.) The positions held by the group indicating a possible interest in full-time academic work were:

PRESENT POSITION	N
Part-time academic	215
Hospital and/or research	131
Full-time practice	109
Industry	48
Government	129
Fellowship*	145
Other positions	41
Total	818

The pattern is roughly consistent with the preceding summary taken from Table 49. The fact that fewer persons on fellowships answered this question affirmatively than selected full-time academic posts as their primary career choice probably is an artifact. Forty-four per cent of the group that had returned to fellowship status did not reply to the present question. Those holding senior awards such as scholar grants may have considered themselves as being in academic life already and therefore felt that the question analyzed in Table 50 did not apply to them.

The contributions being made by M.D.'s and Ph.D.'s among past fellows were compared in Table 37. We found their service to medical education equal in terms of the percentages holding full-time medical school appointments (see page 1410). However, the Ph.D.'s were in full-time academic life to a greater extent than were the physicians, since a sizeable group of Ph.D.'s were serving full-time on the faculties of the graduate schools and colleges in addition to those found on the faculties of medical schools. We may now compare the potential contributions of M.D.'s and Ph.D.'s based on their replies to the question concerning their willingness to consider academic posts:

	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Not in Full-time Academic Work</i>								
Interested	503	32	264	28	51	28	818	30
Interest not specified	252	16	57	6	30	16	339	12
Not interested	158	10	22	2	2	1	182	7
Total	913	58	343	36	83	45	1339	49
<i>In Full-time Academic Work</i>								
	663	42	606	64	101	55	1370	51
Grand Total	1576	100	949	100	184	100	2709	100

* Includes a few who were out of professional work.

When we add to those already in full-time academic work the past fellows expressing willingness to consider it, we have:

	N	Total	Per cent of Total
M.D.	1166	1576	74
Ph.D.	870	949	92
Both	152	184	83
Total	2188	2709	81

The group expressing complete disinterest in full-time academic life was made up largely of physicians. However, the number was small and one-third of these people were already in part-time academic medicine (see Table 50).

The potential contribution of the Ph.D.'s to full-time academic life would appear from the above analysis to be proportionately greater than that of the physicians among past fellows. Considered in the light of the interests of medical education, however, these conclusions must be qualified by recalling two factors evident from Table 37: (1) M.D.'s play an additional role through part-time service to the medical schools, and (2) Ph.D.'s make an appreciable portion of their full-time contributions outside the medical schools.

The primary career interests of active fellows were documented in Table 47. They were not asked directly the question analyzed for past fellows in Table 50 about their willingness to consider full-time academic posts. Instead, active fellows were asked to choose between full-time academic appointments and employment under a research grant, as alternatives to extension of their current awards. These preferences are summarized in Table 51, which indicates that about 85% of both junior and senior fellows would prefer academic posts to employment under a research grant. Junior fellows left the door open to the latter possibility as a second choice, but senior fellows had little inclination toward accepting "soft money" positions.

2. *Their Fields of Interest* (Tables 52-54)

Past fellows not in academic life and all active fellows were asked to indicate in which academic departments they would serve if they should accept full-time university positions. This has been analyzed for past fellows against their interest in full-time academic careers in Table 52 and for all fellows according to their degrees in Table 53.

Past fellows holding only the M.D. degree showed little inclination to make their careers in the preclinical departments. Like their counterparts already in academic careers, half of them were drawn toward departments of medicine. Nearly half of the 7% selecting preclinical departments were headed for physiology. Active junior and senior fellows holding the M.D. selected preclinical departments in a slightly larger proportion, but still in small numbers. It would not appear from this that the fellowship system as it has operated in the past decade or two has been successful in encouraging men with the clinical viewpoint to consider careers in the basic science departments in any numbers.

Virtually none of the Ph.D.'s looked forward to careers in clinical departments. Again, it is apparent that the Ph.D.'s tend to congregate in departments of biochemistry. Physiology attracted a surprisingly small proportion of the past fellows with the Ph.D. (6%), and active fellows showed only a little more interest in this field.

Table 54 shows in detail the departments in which past and active fellows would serve, broken down in accordance with their primary career choices. It amplifies Tables 52 and 53 by showing, for each department, the number of persons in our fellowship sample primarily interested in full-time academic posts but not already serving in such positions in 1958. For example, the recruitment potential for departments of internal medicine included 122 past and active fellows who would prefer full-time salaried posts and another 163 who would choose geographic full-time. Corresponding figures for surgery were 23 and 47. Biochemistry departments had a pool of 131 persons upon which they might draw, and physiology 63.

3. *Conditions Under Which Fellows Would Accept Academic Positions* (Tables 55-57)

One condition of employment was explicitly stated in the question to past fellows regarding their willingness to accept full-time academic staff positions (i.e., that they would be assured an acceptable balance between research, teaching and administrative duties). Two subsequent questions were designed to bring out the demands fellows would make in terms of rank and salary if they should consider academic posts.

The faculty ranks for which fellows considered themselves qualified are shown in Table 55. The expectations of past fellows and active junior fellows appear in the main to be relatively modest and realistic. They are reasonably consistent with the positions held by past fellows in academic life, as shown in Table 38.

Senior fellows seemed to have a higher estimate of their academic potential than did either junior or past fellows. This is understandable, since the senior group included two significant components made up of persons with considerable academic background. The senior man who has been granted a fellowship for support during a sabbatical period often holds the rank of professor or associate professor and will return to his post at the close of the fellowship. Grants for scholars are made to persons who already are established to some degree, usually at the assistant professorship level, and who may ordinarily look forward to prompt advancement.

The salary expectations of all fellows are presented in Table 56. In general, these are consistent with their expectations as to rank, and do not appear excessive by present-day standards. The response of active junior fellows can be evaluated a little more readily than those of senior or past fellows because the junior group is comparatively homogeneous with respect to age. More than half of these 1957-1958 junior fellows were willing to consider academic salaries of \$7,000 per annum or less. A majority of those who would be satisfied with salaries of this magnitude were Ph.D.'s. In line with other opportunities available to them, the physicians in all groups expected somewhat higher salaries than the Ph.D.'s. This shows up clearly in the analysis of salaries expected by the active senior group, which is heavily weighted with physicians. The relatively high level of salaries specified by the senior group probably also is related to the factors discussed above in connection with the ranks for which they believed they were eligible.

Fellows next were asked to indicate from a check list any factors that had influenced their decision to refuse academic positions that had been offered them

in the past. Their answers are presented in Table 57. The future potential of the position was the factor most frequently designated as influencing their decisions, and the question of salary was relegated to second place. It may well be argued that these two factors are very closely related, and that an important aspect of the future potential in the minds of the respondents was the potential for the advancement in salary. It is interesting also that the geographic location of the institution was the next most important factor in influencing fellows to refuse academic offers. The adequacy of the physical facilities and the prestige of the department or institution followed.

4. *Further Training Desired by Fellows* (Tables 58-59)

A final step in surveying the fellowship operation was to inquire into the willingness of these people to devote still more time and energy to additional training that would supplement the extensive backgrounds they already had acquired. Some data already have been presented relating to their interest in further fellowship training (Tables 25 and 26). It is apparent that nearly half of the entire group of past fellows were interested in further fellowship support in the future. In Table 58, the desire of past fellows for further fellowship support is analyzed against their interest in an academic appointment. More than half of those who already held full-time academic positions, and nearly half of those who did not but expressed interest in such posts, wanted further fellowship support. On the other hand, less than 20% of the group that would not consider academic appointment indicated a desire for another fellowship.

A series of questions was included in order to determine the interest of past and active fellows in securing a second doctorate. These responses are tabulated in Table 59. The M.D.'s were considerably impressed by the potential benefits they might derive from the discipline involved in working toward the Ph.D. degree. Thirty-six per cent of all fellows with the M.D. felt that they would be in a better position to pursue their careers if they held both degrees. It was clear that few of them saw economic advantage for themselves, but they felt the discipline involved would improve their professional potential. When asked whether they would be willing actually to enroll in graduate school and meet in full the requirements for the Ph.D., provided this were possible without any financial burden, 27% of the physicians answered in the affirmative.

The Ph.D.'s as a group showed an unexpected interest in the potential benefits of supplementing their scientific background through the training leading to the M.D. degree. Forty-two per cent thought that this would place them in a better position to pursue their careers. Apparently the economic gains influenced their thinking, since 73% believed that it would place them at an economic advantage and only 34% believed that it would increase their professional potential. In response to the final question whether they actually would enroll in medical school and work toward the M.D. degree if given an opportunity, 27% answered in the affirmative. It is interesting that this response to the idea of working toward the second doctorate was identical with that of the physicians.

SECTION IV

A STUDY OF INTERNS, RESIDENTS, AND CLINICAL TRAINEES 1957-1958

A. Method of Study

The career interests of active and former fellows and their attitudes toward current fellowship opportunities having been studied, parallel data were sought from another group that might be expected to provide a significant portion of the fellowship applicants of the next few years. A questionnaire (Appendix I, Exhibit 4) was distributed in late November, 1957, to a selected group of interns, residents and clinical trainees.* Most of the respondents were working in the teaching hospitals closely affiliated† with medical schools in the United States. Smaller numbers came from hospitals that were either loosely affiliated‡ or not connected with a medical school.

1. Selection of the Sample

In selecting the sample for study, the cooperation of the Council on Medical Education and Hospitals of the American Medical Association was enlisted. With the help of the Council, a list was compiled of 113 U. S. hospitals, including the following:

- (a) All of the 90 teaching hospitals having a "close" affiliation with a parent medical school.
- (b) Six hospitals that were "loosely" affiliated with a medical school.
- (c) Seventeen, out of more than 3,000, accredited hospitals having no connection with a medical school.

One point about the selection of this sample should be emphasized. A representative sampling of all interns and residents in the United States was not considered desirable for purposes of this study. Instead, the effort was made to reach some of the young clinicians who were most likely to be oriented toward academic pursuits and who might be expected to have some understanding of the nature and purposes of the postdoctoral fellowship. The 90 teaching hospitals defined by the American Medical Association as having a "close" or "primary" affiliation with an accredited medical school therefore constituted a major segment of the sample. The purpose of including a few hospitals in the "non-affiliated" and "loosely affiliated" categories was to augment this sample, rather than to provide a control group in the statistical sense. Hence, the selection of the remaining 23 hospitals was not based on statistical

* For purposes of this study, a clinical traineeship is defined as an award which enables the recipient to integrate subspecialty training and research, but relieves him of the routine responsibilities of a residency. Ordinarily the clinical trainee has completed or is nearing the end of his residency training.

† It is recognized that the distinction between a "primary" affiliation and a "loose" one is a matter of personal definition. Some authorities probably would classify more than 90 hospitals as having a close affiliation with a medical school. At the other end of the scale, there are hospitals connected with medical schools in such tenuous fashion that there would be differences of opinion regarding their inclusion in a list of loosely affiliated hospitals.

sampling methods, although the factors of size and geographic location were considered. Rather these hospitals were included because they were regarded as broadly representative of the best in present-day medical teaching and clinical training and might be expected to attract house officers with comparable interests* and of the same high caliber as those in the teaching hospitals of the medical schools. The director of the survey worked in close consultation with the officers of the Council on Medical Education and Hospitals in making these choices.

The administrators of the 113 hospitals received packets of questionnaires which they were asked to distribute to *all* of the interns, residents, and clinical trainees within their institutions. Their help in collecting and returning the responses was also enlisted. Steps were taken to protect the anonymity of individual responses, and the administrators were assured that analyses would not be made in such a way as to identify the responses from an individual hospital.

2. Response to the Questionnaire

Estimates were provided by the American Medical Association of the approximate number of house officers and clinical trainees in each hospital. In addition, each administrator was requested to report the number of physicians actually working in these capacities within his institution and included in this distribution. Cooperation in general was excellent, but a few failed to reply. In some instances, the replies appeared to be based on estimates. There also were indications that the distribution of questionnaires may not have included all of the house officers in a few hospitals. For these reasons, the percentage of returns cannot be calculated exactly. It is estimated that approximately 9,500 persons received the questionnaire, and that this number was slightly smaller than, but reasonably close to, the total number of physicians for whom it was intended in the hospitals studied. Responses were received from nearly 7,400 people, or about 78% of the estimated sample. Presumably there were a number of reasons for lack of response. Lack of interest in fellowships and academic careers may have been an important factor. Antipathy to questionnaires or error in the distribution and collection of the forms may also have played a part.

A special group of 856 questionnaires was eliminated from the present analysis. These were submitted by graduates of foreign medical schools who said they intended to leave the United States at the end of their training periods to make their careers in their native countries. The responses of those foreign graduates who planned to remain in the United States were regarded as pertinent to the survey and were included in the analyses.

Since time and resources were limited, a 50% sample (3,269 responses) was selected for complete analysis in the following manner: Half of the questionnaires returned from each hospital were coded. The choice was made by selecting every other questionnaire in the order in which they were received from the hospital.

* Analysis of the responses of persons from the 23 "loosely affiliated" and "non-affiliated" hospitals indicated that they did not differ significantly from the remainder of the sample with respect to their career interests and their attitudes toward Ph.D. training. The combination of the three groups in the analyses that follow was therefore regarded as justified.

B. Description of Sample**1. Personal Data (Table 60)**

Of the 3,269 interns, residents and clinical trainees whose responses were selected for study, the distribution by sex was as follows:

	N	%
Men	2951	90
Women	218	7
Not specified	100	3
Total	3269	100

About 7% (223) were foreign graduates who had indicated their intention of remaining in the United States, and the remainder were citizens of this country. Only 28% of the entire group were single; their dependency status is shown in Table 60.

2. Education (Table 61)

These physicians for the most part were recent medical school graduates, 80% having completed work for the M.D. within the five preceding years (1953 through 1957). Only 6% had obtained other advanced degrees; these were as follows:

	N	%
Ph.D.	27	1
Sc.D.	12	0
M.A. or M.S.	146	5
None, other than M.D.	3084	94
Total	3269	100

The general areas in which these degrees were earned were as follows:

	N	%
Clinical fields	19	10
Preclinical fields	138	75
Nonmedical or field not specified	28	15
Total holding advanced degrees other than M.D.	185	100

3. Clinical Training (Tables 62-63)

The status of the group in clinical training at the time the questionnaire was returned is indicated in Table 62. Seventy-one per cent were in residency training, and 27% were interns. The remaining 2% (75 persons) held clinical traineeships.

The distribution of the residents by their fields of clinical training appears in Table 63. Medicine and its specialties account for a smaller percentage (21%) of this sample than was the case for fellows or applicants for fellowships (see Tables 12 and 30). Surgery, on the other hand, had a higher representation (30%).

Half of the group were working in hospitals affiliated with medical schools primarily supported by private funds. One-third were in hospitals affiliated with schools that were predominantly tax-supported. About 7% came from hospitals with multiple affiliations involving both privately-supported and tax-supported medical schools. The remaining 10% were located in hospitals not closely affiliated with any school.

4. Fellowship History (Tables 64-66)

The fellowship experience reported by interns, residents and trainees is summarized in Tables 64 and 65. Thirty-one per cent had held predoctoral fellowships, but their postdoctoral fellowship experience was limited. Four per cent had held research fellowships at the postdoctoral level and about the same number had had the advantage of clinical fellowships or traineeships. The few fellowship appointments were of relatively short duration, usually less than two years.

The fields in which these people had worked as postdoctoral fellows are shown in Table 66. Most of the research fellowships, as well as the clinical appointments, had been awarded for study in clinical departments. While the numbers are small, the data are consistent with the findings in the two previous sections that internists had held more postdoctoral fellowships than had persons in any other field. This was true for interns and residents despite the fact that surgeons outnumbered internists in the sample.

5. Training in Research (Table 67)

Although few of them had had postdoctoral fellowship training, many of these men and women had found opportunities to gain some familiarity with research. Of the 3,269 physicians whose questionnaires were analyzed, 1,411 (43%) indicated that they had had research training or experience in one or more of the following situations:

	N	%
As a medical student	849	26
As a graduate student	218	7
As an intern or resident	413	13
As an employee under a research grant	186	6
Total with research experience	1411	43
No research experience	1858	57
Total	3269	100

In the main the experience had been for relatively short periods, often for less than one year. This was particularly true of the research training these men had received while they were medical students. Probably much of that training was made possible by summer fellowships, of the type designed to provide an introduction to research during vacations from medical school. Table 67 includes further details concerning the duration of the research experience and the setting in which it took place.

C. The Career Interests of Interns, Residents, and Trainees (Table 68)

A primary objective of the questionnaire was to elicit information on the career goals toward which interns and residents were working. The table that follows lists the terms used in the subsequent text and tables to describe the preference expressed, defines these terms by quotations from the questionnaire, and indicates the distribution of the responses:

CLASSIFICATION OF CAREER PREFERENCES	Definition	Response	
		N	%
Full-time medical school post: Salaried	A salaried full-time medical school appointment with teaching, research, and clinical responsibilities, but WITHOUT the privilege of private medical practice.	252	8

CLASSIFICATION OF CAREER PREFERENCES	Definition	Response	
		N	%
Geographic	An essentially full-time salaried medical school position requiring a restricted or limited private practice to supplement your income.	558	17
Private practice with:	A career essentially in private practice with:		
Part-time teaching	A part-time teaching appointment in a medical school.	1483	45
Part-time research	Part-time participation in a research program.	221	7
Both	(Checked both of the foregoing)	415	13
Neither	No research or teaching activities.	245	7
Other*	A full-time medical school position in a preclinical department without clinical responsibilities, or A full-time research position, without teaching or clinical responsibilities, or Other choices not listed on the questionnaire but written in by respondents.	71	2
	Not specified	24	1
	Total	3269	100

The fact that one-quarter of the sample preferred full-time medical school positions indicates an unexpected orientation toward academic careers. Equally impressive was the degree of interest in part-time teaching and research shown by those who preferred to make their careers essentially in private practice. Sixty-five per cent or nearly two-thirds of the entire sample wanted to combine teaching or research or both with medical practice. If one assumes that these goals will be pursued actively, the physicians training in the primary teaching hospitals would appear to constitute a promising source for recruitment to academic medicine.

1. Shift in Goals since Graduation from Medical School (Table 68)

The shift in career preferences of interns and residents since their graduation from medical school suggests that interest in academic pursuits had increased during the years of postdoctoral clinical training. The number of people interested in full-time or part-time teaching had increased from 2,384 to 2,708 (from 73% to 83% of the entire sample).

2. Interest in Research (Tables 69-71)

Two related questions sought to clarify the degree and motivation of the research interests of these physicians. The first question used a positive

* The number of people who checked these preferences was very small:

Preclinical departments	18
Full-time research	15
Other	38
Total	71

For this reason, they were combined in the tabulations.

approach: "If you would like to devote a substantial portion of your career to research, are you inclined toward:

- a. Research in a clinical science?
- b. Research in a preclinical science?
- c. A combination of a and b?"

In view of this wording, lack of any response was assumed to mean that the individual had little or no interest in research. The second question was addressed to those whose inclination was against the inclusion of research in their careers, and so the interpretation was reversed. In each case, the reasons for the interest or lack of interest were sought.

Half of the sample (1,636 persons) indicated an interest in devoting a substantial portion of their careers to research (Table 69). The following summary shows the kind of research they wanted to do:

NATURE OF RESEARCH INTEREST	N	%
Clinical	995	31
Preclinical	76	2
Combination of above	565	17
Total interested in research	1636	50
Not interested	1633	50
Total	3269	100

The nature of their interest in research also is analyzed against career preferences in Table 69. About 90% of the 810 persons preferring full-time academic careers wanted to devote substantial time to research.

What were the factors underlying this interest in or inclination against research? Nearly three-quarters of those who wanted to include research in their careers said they were motivated by curiosity to investigate problems of special interest (Table 70). They were less inclined to attribute their interest in research to association with particular faculty or staff members whose accomplishments had impressed them, or to their own previous research experience.

Table 71 indicates that about 70% of those who were inclined against including research in their careers were more interested in other areas. Few had been influenced against research by their previous experience in the field, or by a feeling that opportunities were limited. Nearly one-quarter of this group cited economic problems as affecting their choices.

3. *Interest in Teaching* (Tables 68, 72-73)

Two additional questions were included as a check on the earlier statements of their career goals as regards interest in medical school teaching. The pattern for the preceding check-list item on attitudes toward research was followed, i.e., one approach was positive and one was negative. Inclination in favor of (or against) teaching was inferred when there was no response. Again the results were consistent with the earlier responses: 2,708 persons had chosen career goals that involved some teaching (Table 68); 2,506* checked one or more factors that had led them to an interest in teaching (Table 72); and 2,714 checked none of the factors underlying a disinclination for teaching (Table 73).

* The discrepancy is undoubtedly due to the wording of the question analyzed in Table 72. A response to this question implied interest in devoting "a substantial portion of your time" to teaching.

Interns and residents desiring to teach in a medical school were motivated primarily by two factors: a desire to participate in the education of physicians, and a recognition of the potential contribution of teaching to their own clinical acumen (Table 72).

Of the 555 persons who answered the second question (implying a disinclination toward teaching), about half felt that it would encroach upon time they needed for other activities (Table 73). Only 119 people admitted that they disliked teaching, and only 44 believed that it would contribute nothing to their primary career objectives.

4. *Obstacles Foreseen to Pursuit of Their Chosen Careers* (Table 74)

Interns and residents next were asked what obstacles they foresaw to the pursuit of their careers. More than half of the sample (1,802 persons) saw no obstacles in their way, but many of these people were interested essentially in private practice. Among those preferring medical school posts, 43% anticipated economic pressures and about 35% were uncertain that suitable positions would be available to them upon completion of their training. They showed little concern over the availability of training opportunities.

Responses to the question on career obstacles were correlated with marital status, sex, and present position. Since the differences were slight and in the expected direction, these data are not presented. Married men with children were somewhat more concerned about economic pressures than were single men (30% compared with 17%). In other respects, married and single men reacted identically. Fewer women than men cited economic pressures (16% versus 25%), but women were a little more likely to question the availability of positions (28% against 21% of the men). Residents were a little more concerned about the availability of positions than were interns.

5. *Fields Chosen for Ultimate Careers* (Tables 75-78)

Those who expressed interest in full-time academic posts were asked to indicate in which departments they would elect to work. These are shown in Table 75, which includes, for purposes of comparison, the number of residents on each service and the number planning specialty board certification in each field.

The men who planned academic careers showed no inclination to forsake their clinical interests. Only 11 persons said they would go into preclinical departments. Departments of internal medicine would attract 225, and departments of surgery, 208 (i.e., more than half of those interested in academic life would serve in these two areas). Academic psychiatry and pathology each had 63 potential recruits within this group, and pediatrics had 81.

Career choices are analyzed against proposed fields of specialty board certification in Table 76. Pathologists, more than any other group, were oriented toward academic posts, 38% indicating interest either in a salaried or a geographic full-time position. Those who planned to specialize in internal medicine, psychiatry and neurology, and pediatrics followed with just over 30% each. Obstetricians and ophthalmologists were particularly attracted by part-time teaching posts in combination with practice. Those who did not plan to seek certification were going into practice almost exclusively; only 6% indicated an interest in academic positions.

Specialty board plans are compared with interest in research in Table

77. At least half of those who were planning careers in the fields of medicine, pathology, psychiatry, pediatrics, and surgery were oriented toward research. The group that did not propose to specialize had comparatively little interest in research.

Interest in teaching, as already noted, was proportionately higher than interest in research. However, when the teaching interests of persons in various specialties were compared (Table 78), the pattern was similar to the profile of research interests in the preceding analysis.

6. *Other Factors Associated with Career Choices* (Tables 79-83)

Choice of a career obviously may be the result of any number of complex factors and combinations of factors. Some of the influences that affect these decisions (i.e., personality, ability, motivation, family income) are outside the purview of this study. It is pertinent, however, to study the relationship between career choices and certain factors of background and experience for which data are at hand.

Dependency status appears to bear no relationship to career preference, according to the analysis in Table 79. Married men with children were just as likely to go into academic careers as were single men, and were equally disinterested in private practice. Women showed a greater interest than men in full-time academic positions (Table 80). Seventy-six women, or 35%, elected a university post as compared with 24% of the men.

The differences between the career choices of interns and residents were slight (Table 81). The length of time already spent in residency training bore no relationship to their goals, and these data were omitted. However, clinical trainees were oriented in the direction of full-time academic work to a greater extent than were interns or residents.

The relationship between career plans and the financial support of the medical schools with which the teaching hospitals were connected is shown in Table 82. Men training in hospitals affiliated with privately-supported schools tended to be a little more interested in full-time academic life (29%) than those working in tax-supported institutions (23%). The group working in hospitals not affiliated with medical schools, or in hospitals with a loose affiliation showed a slightly greater interest in medical practice, and were a little less inclined toward full-time academic medicine (16%). Those in hospitals with a multiple affiliation were even less interested, but this may be a chance effect, in view of the small size of this group.

Fear has been expressed that postdoctoral fellowships, with their emphasis upon full-time research experience, may be diverting men into research and away from academic careers. The evidence presented in Table 83 does not support this hypothesis. Thirty-eight per cent of those who had had research experience at any point in their training said they would like to obtain full-time medical school posts, as compared with 15% of those with no previous experience in research. Sixty-five per cent of those who had held research fellowships preferred full-time academic life; only 23% of those who had never held a research fellowship wanted full-time medical school posts. Does this imply a causal relationship, i.e., can we assume that the research experience has drawn this group into academic life? It seems equally logical that those with a bent toward academic pursuits may have sought out research experi-

ence (particularly through fellowships) as an integral part of their training.

A positive relationship also was found between career preferences and the duration of research experience. As the length of previous research training was extended, there was a progressive increase in the percentage electing academic careers. This is illustrated in Table 83 for experience gained during medical school and during postgraduate clinical training. To check the results shown in Table 83, we compared the interest in research and teaching* of those who had had some previous exposure to research with the interests of those without research experience. The percentage distributions for the two groups were:

	Some research experience	No research experience
Per cent interested in research	69	36
Per cent interested in teaching	85	71
Total	(1411)	(1858)

These results were consistent with the analysis in Table 83. They serve to reinforce the impression that a large number of clinicians who have had the opportunity for experience in research seek well-rounded academic careers.

D. Further Training Desired in Preparation for These Goals

1. Board Certification (Table 77)

Ninety-five per cent of the entire sample said that they planned, sooner or later, to meet the requirements for specialty board certification. The fields in which they proposed to specialize have been discussed.

2. Interest in Obtaining the Ph.D. Degree (Tables 84-85)

The questionnaire solicited the opinions of interns and residents regarding the value of exposure to further academic discipline, and attempted to gauge their interest in such pursuits.

One-third of the sample (1,120 people) believed they would be better prepared to pursue their chosen careers if they had all of the experience represented by the Ph.D. in a preclinical science. This does not express the full measure of their interest, since 47% checked one or more of the following advantages:

	N	%
Felt Ph.D. would improve their:		
Economic potential	129	4
Research potential	1138	35
Ability to teach	748	23
Clinical acumen	604	18
Total replying to one or more of above questions†	1547	47
Did not reply	1722	53
Total	3269	100

Like the physicians among the past fellows, these men saw professional, but not economic, advantages to acquiring a second doctorate.

Two-thirds of the 1,120 people who acknowledged that Ph.D. training would better prepare them for their careers indicated their willingness to devote

* As indicated by the responses to the questions concerning the reasons for their interest in research and teaching (Tables 69-73).

† Multiple responses were included above, but not in this total.

the time and energy involved, *provided* this were made possible without financial burden. This means that 23% of the entire sample (758 out of 3,269 physicians) said they were willing, with this qualification, to undergo several more years of rigorous academic discipline.

When asked why they were unwilling to enroll toward the Ph.D., 1,568 people (48% of the sample, or two-thirds of those who were not inclined to work toward the second degree) cited the length of time involved. About 40% of that group (29% of the sample) regarded the training as unnecessary.

Table 84 shows the relationship between career choices and willingness to work toward the Ph.D. degree. Nearly half of the 252 people who preferred a full-time salaried academic position said they would take advantage of the opportunity to meet the requirements of the second doctorate, if this were possible without financial burden. Only 12% of these people thought such training was unnecessary. Nearly 40% of the 558 persons electing geographic full-time positions and 33% of those who preferred to combine private practice with research (72 out of 221) would be willing to invest the time involved in working toward the degree if financial worries were not a factor. Of those who preferred full-time practice without research or teaching activities, only 10% would work for the Ph.D. degree, whereas 41% regarded it as unnecessary.

When willingness to work toward the Ph.D. was analyzed against interest in research and in teaching, the results (Table 85) confirmed the foregoing analysis. Those oriented toward research and teaching were more likely to believe in the possible advantages of holding a second doctorate and were more inclined to invest the necessary time. Twenty-five per cent of those who said they wished to include medical school teaching in their careers, and 17% of those without interest in teaching, were willing to work toward the Ph.D. degree.

No evidence was found that family responsibilities bore any relationship to the attitudes toward securing the second doctorate. This is not surprising, since the replies were predicated upon the absence of financial sacrifice. Men and women were equally prepared to undertake work toward the doctorate.

The data similarly indicate that there is no relationship between the individual's attitude toward the Ph.D. and the type of medical school with which his hospital was affiliated.

Just as research experience in the course of undergraduate or graduate training was associated with an interest in academic careers (Table 83), it also was related to a willingness to devote the time necessary to prepare for such careers. Twenty-eight per cent of those with some experience in research, and 19% of those with none, would work toward the Ph.D. if it were made possible financially. Details are shown in Table 86, which indicates that it is the duration of experience, rather than the setting in which it took place, which is directly related to interest in obtaining a Ph.D. degree.

3. *Interest in Course Work as an Alternative* (Table 87)

In addition to the 758 persons who would take the time necessary to complete work toward the Ph.D. degree, another 995 (30% of the total sample) said they would welcome an opportunity for additional course work in selected subjects. Their attitudes toward course work, and the specific courses they would choose, are analyzed by career preferences in Table 87. The academically-oriented physicians were more interested in the biological sciences and chemistry than

were those who preferred careers in private practice alone. Neither group showed the same appreciation for the importance of the physical sciences as did past fellows (Table 36 and 44).

4. *Desire for Further Training in Research* (Table 88)

Two-thirds of the 3,269 physicians said they would like further experience in research. Eighty-six per cent of those preferring full-time academic careers wanted more such training, compared with approximately one-third of those interested solely in private practice.

When interns and residents were asked how they would like to obtain this research experience, only 15% selected fellowships, and 21% preferred traineeships. The remainder said they would prefer to secure their research experience concurrently with their residency or to be released intermittently from residency responsibilities for brief periods of full-time concentration on research.

Those with academic career goals were more favorably disposed toward fellowships than any other group. The men who would choose full-time salaried faculty posts preferred fellowships over traineeships, but would be equally satisfied with a plan that combined research training with their residency duties. The present fellowship system attracted only one-third of these 252 academically-minded clinicians, and less than one-quarter of them felt that the clinical traineeships best met their needs. The 558 persons who preferred geographic full-time positions were still less inclined to want research fellowships (25% preferred fellowships, 26% clinical traineeships).

5. *Desire for Additional Teaching Experience* (Table 89)

A final question regarding the training interns and residents would like to have in preparation for their careers dealt with their desire for further teaching experience. As a means of securing such experience, they were asked to choose between (1) a fellowship providing a planned and guided teaching experience as well as clinical or research experience, and (2) "on-the-job" training as in the usual junior academic positions. About 60% of the sample (1,987 people) expressed a desire for additional teaching experience. Of this group, 45% would choose the fellowship as a mechanism and 54% would prefer to obtain their experience in actual teaching positions. The responses to this question are analyzed according to career preferences in Table 89. Of those who wanted full-time medical school posts (either salaried or geographic), 78% wanted teaching experience of some kind, and more than half of this group preferred the fellowship as a means of securing such training. Those who wished to engage in teaching along with private practice were also interested in teaching experience, but tended to favor "on-the-job" training over fellowships as a mechanism for securing the experience.

E. *Evaluation of the Fellowship System by Interns, Residents, and Trainees* (Tables 90-92)

Data already discussed (Tables 88 and 89) suggest that these young men lack enthusiasm for research fellowships. These opinions should be interpreted in the light of their responses to the following question: "In your opinion, is sufficient detailed information about research fellowships, clinical traineeships and other career training opportunities reaching interns and residents?" Eighty-four per cent replied that they were not well-informed about such opportunities.

They felt strongly about this if one may judge from the exclamation marks that punctuated their comments. Some of them added that their lack of information about fellowships made it difficult for them to answer the other questions on the value of such training in their own cases.

Within this context, we may examine in more detail the attitude of interns and residents toward existing research fellowships and traineeships. They were asked how various features of existing research fellowships affected the suitability of these awards to their own plans and goals. The responses appear in Table 90. Almost 60% reacted favorably to the opportunity for concentration in specialized areas of medical science. Forty per cent were concerned about the time involved in research fellowship training. The level of stipends was unattractive to half of the group, but 23% regarded this as an appealing feature. Sixty-one per cent were unfavorably impressed by regulations excluding teaching activities, and 66% were unhappy over the restriction of opportunity to maintain their clinical proficiency.

In Table 91, the reactions of interns and residents to certain features of clinical traineeships are shown. Again, they welcomed the opportunity for concentration in specialized areas, but were unfavorably impressed by the level of stipends.

Half of the interns and residents said they would like to see a year or two of clinical traineeship or research fellowship experience credited toward specialty board certification provided it did not lengthen the time involved.

The group was asked whether the presence of trainees or fellows in their hospitals or services had affected the character of their internship or residency experience. Only half of the sample acknowledged any effect in either direction; nearly all who saw an effect agreed that it had been beneficial. Details concerning the effects they cited appear in Table 92.

A final question concerned the effect of the research activities of staff and faculty members on the clinical experience.* Fifty-three per cent of the sample thought the effect on their training had been beneficial. Thirty-nine per cent believed that these research activities had increased the availability of the staff and faculty for clinical teaching and consultation.

* While the question was directed to residents, many of the interns and trainees answered it as well. Their replies are included in the figures cited.

SECTION V

A STUDY OF THE FULL-TIME MEDICAL SCHOOL FACULTY MEMBER

1957-1958

The full-time faculty members in the medical schools play a predominant role in the national fellowship system:

(1) As supervisors of a major proportion of the fellows in the medical sciences, they determine the character of the fellows' training and experience. The effort they give to the task, moreover, affects the amount of time they can devote to their other academic duties.

(2) As teachers of students who may become fellows in the future, they have a profound influence during the years when these students are forming attitudes and making career decisions. Their guidance, remote in time or immediately before the fellowship, is important in determining whether or not the graduate will seek a fellowship, and the nature of the fellowship experience he will elect.

(3) As members of the selection boards of the national granting agencies or of their own schools, they decide which candidates shall receive fellowships.

(4) As past fellows, many of the faculty members of the medical schools are applying to their academic duties the skills and understanding acquired during the fellowship years.

(5) To a limited extent, the faculty members themselves hold fellowships from time to time, thus participating as beneficiaries of the system at an advanced level.

In short no group is more closely involved with the medical fellowship system than the medical school faculties. We therefore completed our study by seeking information from them.

A. *Method of Study*

Two questionnaires were used:

(1) A preliminary questionnaire was sent in 1957 to the heads of eleven departments in all the medical schools of this country (Appendix I, Exhibit 5).

(2) A questionnaire was sent in 1958 to the full-time faculty members in seven of these departments in all U. S. medical schools (Appendix I, Exhibit 6).

The first questionnaire requested the following information from *department heads*:

(1) Lists of the full-time faculty members, fellows and grant-supported personnel in their departments during 1956-1957 (Appendix I, Exhibit 5-c).

(2) Their views on the balance between teaching and research in their departments.

(3) Their opinions of the qualifications of candidates for vacancies in their departments, and on obstacles to employing well-qualified candidates.

The second questionnaire provided the following data from *full-time faculty members* as listed by department heads (Appendix I, Exhibit 5-c):

(1) Their academic and clinical qualifications.

(2) The types of positions they held in 1957-1958 and the sources of their salaries.

(3) The academic activities in which they engaged, the division of their time among these responsibilities, and their reaction to this distribution of their time.

(4) Their views on the balance between teaching, administration, and research in their departments as a whole.

1. *Selection of the Two Samples*

The Division of Medical Sciences maintains a mailing list of all department heads in the medical schools of the United States. The first questionnaire was sent to all of the heads of six clinical and five preclinical departments (see Table 111 for breakdown by departments).

The sample for the second questionnaire was based upon the lists of personnel furnished by the department heads. Seven of the eleven departments were selected—the clinical departments of medicine and surgery, and the five preclinical departments of anatomy, biochemistry, microbiology, pharmacology, and physiology. Questionnaires were sent to everyone listed as holding full-time faculty positions in these seven departments, and receiving support from the regular departmental budget. The full-time department members supported by research grants in the same departments were included as well. The number of people in the latter category was relatively small, but a comparison of their attitudes and opinions with those of full-time faculty members on the regular departmental budgets was desired.

It was not feasible to fill in the gaps in the second sample that resulted from failure of response to the first questionnaire. Medical school catalogues generally do not differentiate between full-time and part-time faculty. If the department head did not reply after careful follow-up, faculty members in his department were omitted from the mailing of the second questionnaire. Since 88% of the departments involved responded*, the sample was reasonably complete.

2. *Response to the Questionnaires*

The response from department heads to the first questionnaire was as follows:

	Clinical	Preclinical
Total forms distributed	479	386
Number returned	375	348
Per cent returned	78	90

The second questionnaire originally was mailed to 3,851 full-time faculty and grant-supported personnel. On the basis of subsequent correspondence or questionnaire returns, 100 were eliminated, either because they were no longer in academic life or because they had moved and could not be located. The response from the remaining group of 3,751 faculty members was as follows:

DEPARTMENT	Total forms distributed	Number returned	Per cent returned
Clinical			
Medicine	932	681	73
Surgery	559	387	70
Total	1491	1068	72

* Response for the seven departments selected was better than the over-all response of 84% for all eleven departments.

DEPARTMENT	Total forms distributed	Number returned	Per cent returned
<i>Preclinical</i>			
Anatomy	584	457	78
Biochemistry	509	381	75
Microbiology	390	296	76
Pharmacology	322	253	79
Physiology	455	338	74
Total	2260	1725	76

3. Limitations of the Data

In the three years since our data were obtained, the American Medical Association and the Association of American Medical Colleges have reported on certain aspects of the contemporary medical school scene in the United States pertinent to this part of the survey^{1, 2}. Their recent studies have included the following areas touched upon by our two questionnaires:

Number of full-time faculty members in the medical schools

Number of physicians on medical school faculties in the "geographic full-time" and part-time categories

Number of budgeted unfilled vacancies on medical school faculties

Sources of funds for support of the over-all programs of the medical schools

Federal grant support of full-time medical school faculty members

Teaching responsibilities of medical school faculty members.

In these areas where more recent information is available, discussion of our data will be brief. The results are presented in Appendix V to define our own sample as a prelude to considering the activities and opinions of these faculty members.

It is apparent also that our sample of full-time faculty members has certain limitations that should be borne in mind in interpreting the results:

(1) It is limited to seven departments, two clinical and five preclinical.

(2) Within the seven disciplines, it includes 75% of those listed as full-time faculty in 1957 by the 88% of department heads responding to the first questionnaire. The effect of these limitations may be seen by comparing the sample with the number of full-time faculty members reported by the American Medical Association in 1959³:

DEPARTMENT	NUMBER OF FULL-TIME FACULTY MEMBERS IN U.S. MEDICAL SCHOOLS	
	Reported by AMA in 1959	Answered NAS-NRC questionnaire in 1958
Two clinical departments studied	2544	1068
Other clinical departments and pathology	4718	----
Five preclinical departments studied	2983	1725
Other preclinical departments	105	----
Total	10,350	2793

Clearly our sample was weighted toward the preclinical departments, for two reasons: (1) Our selection of departments was the prime factor. (2) Beyond

¹ Wiggins, Walter S., Shepherd, Glen R., Hinman, John, and Tipner, Anne. Medical Education in the United States and Canada. J.A.M.A., 171:1508-1533, November 14, 1959.

² Wiggins, Walter S., Leymaster, Glen R., Taylor, A. N., and Tipner, Anne. Medical Education in the United States and Canada. J.A.M.A., 174:1423-1445, November 12, 1960.

³ Wiggins, et al. Op. cit. J.A.M.A., 171:1528, November 14, 1959.

this, it appears that efforts to identify the full-time faculty members (through the first questionnaire) were more successful in the five preclinical fields than in departments of medicine and surgery. (This is understandable in view of the size and organizational complexity of the clinical departments.) These two factors make it impossible to combine and extrapolate to the medical school faculties as a whole our data on the characteristics, positions, and opinions of faculty members. For this reason, data for clinical and preclinical departments are shown separately in each table in Appendix V. For ease of analysis, the breakdown between clinical and preclinical departments was made according to the departments in which the respondents were located in 1957, except in Table 98, which shows departmental locations in 1958. Comparison of the latter table with others in this section shows that a small migration took place between 1957 and 1958.

B. Description of the Sample of Faculty Members

1. Background

a. Degrees (Table 93)

The doctorates held by the faculty members who answered the second questionnaire are shown in Table 93. The distribution of degrees for clinical and preclinical departments was as follows:

	Per cent in clinical departments	Per cent in pre- clinical departments
M.D.	88	17
Ph.D.	6	74
Both	6	9
Total	100	100
Total faculty members	(1068)	(1725)

b. Sex (Table 93)

Women made up about 5% of the clinical faculty and 8% of the sample in the preclinical departments. A larger percentage of women than of men held the Ph.D. degree (77% as compared with 55%).

c. Date of First Doctorate (Table 94)

Faculty members were not asked to give their age, but were asked to state on the questionnaire the year in which they received the doctorate. A larger percentage of Ph.D.'s than M.D.'s had earned the doctorate within the last ten years. One might infer from this that the physicians were an older group. However, analysis of the actual ages of a random sample of both groups indicated that the M.D.'s were no older than the Ph.D.'s.

d. Field of Doctorate (Table 95)

The fields in which faculty members received the Ph.D. degree are shown in Table 95. More than other basic scientists, biochemists had migrated into departments of medicine and surgery. The 49 biochemists constituted 37% of all Ph.D.'s in these two clinical departments. Eleven of these held the M.D. as well; these cannot be considered as "migrants," since they may have earned the doctorate in medicine first. This leaves a group of 38 non-physicians who held the Ph.D. in biochemistry and who were working in departments of medicine or surgery (29% of all Ph.D.'s in clinical departments). Only 16 Ph.D.'s in physiology were found in clinical departments, and 11 of these also held the M.D. degree.

e. *Clinical Training* (Table 96)

The clinical training reported by the physicians in the sample may be summarized as follows:

	Per cent in pre-clinical departments	Per cent in pre- clinical departments
Had served internship	99	76
Had served residency	95	38
Were certified by a specialty board	77	14
Total	100	100
Total physicians	(1003)	(451)

Table 96 includes an analysis of the length of residency training. This is consistent with the above information on board certification in that 74% of those in clinical departments and 16% of those in preclinical departments had served as residents for three years or more.

2. *Their Present Positions*a. *Faculty Rank* (Table 97)

The ranks held by faculty members, shown in detail in Table 97, are summarized below:

	M.D.	Per cent of Total Ph.D.	Both
<i>Clinical</i>			
Department Heads	12	1	12
Full Professors	16	5	39
All other	72	94	49
Total	100	100	100
Total clinical faculty	(936)	(65)	(67)
<i>Preclinical</i>			
Department Heads	29	13	33
Full Professors	10	14	21
All other	61	73	46
Total	100	100	100
Total preclinical faculty	(286)	(1274)	(165)

M.D.'s held virtually all the chairmanships and full professorships in the two clinical departments, whereas Ph.D.'s held a majority of these senior posts in the preclinical departments. In proportion to their numbers, however, M.D.'s had more often achieved such recognition, even in the preclinical fields. From our analysis of the ages of a small sample of M.D.'s and Ph.D.'s, this difference appears not to be a function of chronological age.

b. *Department* (Table 98)

The departments in which faculty members were located when they returned the second questionnaire in 1958 are shown in Table 98. The disparity between this and other tables in Appendix V is explained by the small migration between clinical and preclinical departments in the interim between the two questionnaires (see footnote to Table 98). While nearly 30% of the physicians were serving in the preclinical departments, very few had chosen departments of biochemistry (only 2%)*. Those who held both M.D. and Ph.D. degrees were

* Table 41, showing the departments in which past fellows were serving, is reasonably consistent with this analysis in respect to the percentage of physicians in biochemistry departments. Past fellows with the M.D. degree apparently were not serving the other preclinical departments to the same extent as were physicians in the faculty sample. The omission of all but two clinical fields in the faculty sample explains the disparity in part.

serving primarily in the preclinical departments (70%). Of the 162 such persons in the preclinical departments, a little over half received the Ph.D. first. About two-thirds of the 69 holders of both degrees in the clinical departments completed their training in medicine before studying for the Ph.D.

c. *Type of Academic Appointment* (Table 99)

The sample was selected to include primarily full-time personnel. More than half of the clinical faculty held full-time salaried positions, and most of the remainder were on geographic full-time with some salary. Only 5% of the staff in the clinical departments held part-time posts. Nearly all (92%) of the preclinical faculty held full-time salaried positions.

d. *Source of Salary* (Table 100)

Analysis of the primary or sole sources of medical school salary reported by faculty members showed that 68% of the clinical sample and 83% of those in preclinical departments were supported by the regular budget.

Although the questionnaire was not sent to anyone listed as a "fellow" in 1957, a small group of 128 people indicated that they received support solely or primarily from fellowship funds in 1958. In some cases this may indicate a change in status in the interim; in other instances, the difference may be one of definition. Most of these men probably were holders of advanced or senior fellowships judging by their activities and responsibilities (to be discussed later in this section).

There was an apparent shift away from research-grant support. Again, this may be partly a question of individual definition. According to the reports of their department heads in 1957, 401 of the sample were supported by grants, but only 295 acknowledged this as their primary source of support on the second questionnaire in 1958.

Differences between clinical and preclinical departments with respect to the pattern of support were as follows:

PRIMARY SOURCE OF SALARY	Per cent in pre-clinical departments	Per cent in pre- clinical departments
Regular budget	68	83
Grants	13	9
Fellowships	5	4
Other	14	4
Total	100	100
Total faculty members	(1068)	(1725)

In the preclinical departments, Ph.D.'s and M.D.'s reported a comparable pattern of support. However, nearly half of the Ph.D.'s in departments of medicine and surgery received all or most of their support from grants.

e. *Private Practice* (Table 101)

Sixty per cent of the clinical faculty members who held the M.D. degree were engaged in private practice to supplement their university salaries. About one-fourth of them depended upon it for a major portion of their incomes. Physicians in basic science departments were far less active in clinical practice, which was a major source of income for only 4% and a secondary source for about 10% more.

f. *Academic Tenure* (Table 102)

The proportion of tenure appointments in preclinical and clinical depart-

ments was almost identical (57% and 56% respectively). Another quarter of each group, without tenure, said that it would appeal to them even though it required that they devote a greater portion of their time to departmental responsibilities, including teaching and administration.

Physicians had the advantage over Ph.D.'s with respect to the proportion that held tenure appointments; those with both degrees were even more likely to have tenure. The percentages of each degree group holding tenure in clinical and preclinical departments were:

	Clinical	Preclinical
M.D.	58	63
Ph.D.	23	54
Both	67	73

C. Their Academic Responsibilities

1. Teaching (Table 103)

Even though 423 persons in the total sample were supported principally through grants and fellowships, only 65 persons reported that the conditions of their appointments excluded teaching responsibilities in the scheduled academic courses offered by their departments. The majority were required to teach, and the remainder said that teaching was optional under the terms of their contracts.

The pattern of teaching responsibility for clinical and preclinical departments is quite similar. The following summary shows the percentage distribution of teaching responsibility by degrees:

CLINICAL DEPARTMENTS	Per cent of total for whom teaching was				Total	Total Faculty
	Required	Optional	Excluded	Not Specified		
M.D.	88	11	1	—	100	(936)
Ph.D.	23	41	28	8	100	(65)
Both	85	15	—	—	100	(67)
Total	83	13	3	1	100	(1068)
PRECLINICAL DEPARTMENTS						
M.D.	86	12	2	—	100	(286)
Ph.D.	89	8	2	1	100	(1274)
Both	95	3	1	1	100	(165)
Total	89	8	2	1	100	(1725)

M.D.'s and Ph.D.'s had a similar pattern of responsibility in preclinical departments. Again, the small group of Ph.D.'s in clinical departments was atypical.

In Table 103, various facets of the teaching responsibilities reported by faculty members are presented in detail. Their role in the organization of course work, in formal lectures, and in laboratory supervision is examined. The data are reasonably consistent with the teaching requirements shown above. The teaching load in the preclinical departments apparently was distributed in the same proportion to M.D.'s and Ph.D.'s, except that the latter carried a heavier responsibility for the training of graduate students. The per cent of each degree group responsible for supervision of graduate students was as follows:

	Clinical departments	Preclinical departments
M.D.	34	48
Ph.D.	23	58
Both	46	70

Because of apparent differences in the definition of the term "graduate student," the information received from clinical departments on this point is open to more than one interpretation. Some respondents from the clinical fields showed that they defined residents as "graduate students." Correction was made for this where it was obvious from their written comments. The possibility remains that the percentages shown above are not comparable for the clinical and pre-clinical departments. One indication is that 80 faculty members in the clinical departments who were physicians said that they were supervising eight or more graduate students.

2. *Proportion of Time Devoted to Research* (Tables 104-106)

Faculty members were asked to estimate, as best they could, the proportion of their time which they devoted to research activities each year. The general interest in the question is reflected by the fact that only two persons in the entire group failed to answer it.

The contrast between clinical and preclinical departments is illustrated by the fact that 75% of those in the preclinical departments and only 41% of the clinical faculty estimated that they devoted half-time or more to research. In the preclinical departments, the pattern was virtually the same for Ph.D.'s and physicians. The few Ph.D.'s in clinical departments were heavily involved in research (44 out of 65 on a full-time basis).

The inverse relationship between academic rank and the proportion of time spent in research (Table 105) probably will not surprise departmental chairmen or other senior faculty members. The percentages, at various ranks, spending about half-time or more in research were:

RANK	Clinical	Preclinical
Chairman	9	47
Professor	33	73
Associate Professor	42	79
Assistant Professor	49	81
Instructor	49	88
Other ranks	71	95

A related finding was that those who held academic tenure spent less time in research than those without tenure (Table 106).

Latent in this situation is the disappointment that may meet a young scientist as he climbs the academic ladder at the diminishing opportunities for research. Sad as this is from the standpoint of the individual, there is another aspect to consider: Is it really in the interest of academic medicine to deflect so much of the time of our senior scientists away from research to institutional and national tasks?

Two-thirds of the clinical faculty and three-quarters of those in the preclinical departments were serving as principal investigators under research grants. Differences between M.D.'s and Ph.D.'s were minor; those who held both degrees were more likely than either of the other groups to be the recipients of research grants. Regardless of their degrees, a majority of the faculty members who were principal investigators under grants found that this made appreciable administrative demands upon their time.

Those who were responsible for the direction of research grants were asked whether they employed research personnel holding the doctorate. If so,

they were asked whether these people devoted full time to research or carried appreciable departmental responsibilities. The answers were somewhat contradictory. It is possible that some of the respondents failed to limit their replies to research assistants that held the doctorate. The responses are not analyzed in Appendix V, but are summarized below:

	Clinical departments	Preclinical departments
Number of faculty members holding grants	713	1298
Number employing one or more persons holding doctorates under their grants	380	440
Per cent of those holding grants who employed one or more holders of doctorates	53%	34%
Number employing one or more holders of doctorates who devoted full time to research	302	358
Number employing one or more holders of doctorates who carried appreciable departmental responsibilities	156	114

3. Administration

We have examined the comparative role of physicians and Ph.D.'s in departmental chairmanships and in the administration of research projects. Their service on the standing committees of the medical schools is shown in the following summary, which indicates that those who held both the M.D. and the Ph.D. were most in demand for such service. The percentage of each degree group serving on standing committees was:

	Clinical departments	Preclinical departments
M.D.	63	65
Ph.D.	26	59
Both	72	73

The comparative freedom of the non-physicians in clinical departments from committee membership fits in with the profile of this small group, which concentrated its efforts on research.

4. Their Opinions as to Whether These Academic Responsibilities Were in Balance (Tables 107-111)

Having secured the foregoing information about their academic responsibilities, we asked the faculty members to evaluate the balance between teaching, research, clinical services, and administration in their own positions and in their departments as a whole.

With respect to the distribution of their own time, nearly two-thirds of the total group expressed satisfaction (see Table 107). Dissatisfaction was more frequent in the clinical departments, as indicated in the following summary:

REACTION TO DISTRIBUTION OF THEIR OWN TIME	Per cent of Total	
	Clinical	Preclinical
Satisfied	55	69
Not satisfied	40	27
Not specified	5	4
Total	100	100
Total faculty members	(1068)	(1725)

Table 107 provides a more detailed analysis of this question, including the manner in which faculty members would have liked to alter the distribution of their own time. Among those who were not satisfied with the distribution of their

time, clinical and preclinical teachers alike were unanimous in wanting to increase their participation in research. Many of them would have preferred to decrease the time they devoted to administration. About one-third (135) of the clinical faculty who were dissatisfied wanted to spend more time in teaching; only half as many (67) would have chosen to decrease the amount of teaching they were doing. Those in preclinical departments were inclined to prefer lighter teaching loads. The clinical group, where change was desired, was anxious to devote less time to clinical service. There was virtually no sentiment for eliminating any of these activities entirely.

In Table 108, physicians and Ph.D.'s are compared with respect to their satisfaction with the distribution of their own time among the various academic pursuits. Within the preclinical departments, their responses were identical. Ph.D.'s were more satisfied than M.D.'s in departments of medicine and surgery. Given a choice, those who were dissatisfied would have altered their teaching and research activities as follows:

Per cent of total desiring:				
<i>Clinical departments</i>	Increased teaching	Decreased teaching	Increased research*	Total Faculty
M.D.	13	6	39	(936)
Ph.D.	14	3	6	(65)
Both	7	7	33	(67)
<i>Preclinical departments</i>				
M.D.	3	11	27	(286)
Ph.D.	4	16	23	(1274)
Both	3	13	30	(165)

Physicians on the clinical faculties were less content with their lot in general than their counterparts in the preclinical departments (Table 108).

The relationship between academic rank and "job satisfaction" is shown in Table 109. Department heads, whether in clinical or preclinical fields, were less pleased with the distribution of their own time than were their colleagues. Instructors were more inclined than the senior staff members to be content with their lot. It is clear from Table 105 that the instructors in our sample spent more time in research and department heads less time in research than those in the middle echelons. The attitudes of faculty members toward distribution of their time, broken down by time in research, were as follows:

Per cent of total who were:				
TIME IN RESEARCH	Satisfied	Not satisfied	Not specified	Total
More than half to full-time	81	15	4	100
About half-time	74	23	3	100
Less than half-time	44	51	5	100
Little or no time†	36	59	5	100
Total	64	32	4	100

The inference that "job satisfaction" and opportunity for research are directly related will come as no surprise to the academic community.

Next, we invited faculty members to evaluate the balance between

* The percentages desiring to decrease their research were negligible.

† Includes two persons who did not specify time in research.

teaching, administration, and research in their departments as a whole. The pattern of response for clinical as compared with preclinical departments was almost identical with that for the comparable question respecting the distribution of their own time.

Academic responsibilities in department as a whole were:	Per cent of Total	
	Clinical	Preclinical
In balance	56	73
Not in balance	36	21
Not specified	8	6
Total	100	100
Total faculty members	(1068)	(1725)

Differences between the answers of M.D.'s and Ph.D.'s were negligible, hence this breakdown was omitted.

In Table 110, the evaluation of the balance for the department as a whole is analyzed by faculty rank. There is little evidence of relationship between these two factors. Departmental chairmen, who were less happy than their colleagues about the division of their *own* time, apparently agreed with them regarding the general balance of academic responsibilities in their departments.

The foregoing analysis (Table 110) may be compared with the views of departmental chairmen on the same question, as expressed on the first questionnaire in 1957. These are set forth by department in Table 111. At first glance, it appears that the situation must have improved between 1957 and 1958, particularly in the clinical departments. Only 30% of the clinical department heads were satisfied in 1957 that teaching and research were in balance, compared with 56% in 1958. In part, the difference is due to the more critical response in 1957 from the departments that were omitted from the 1958 study (obstetrics and gynecology, pathology, pediatrics, and psychiatry). Correcting for this by omitting these four departments from the 1957 data, the opinions of departmental chairmen in 1957 and 1958, expressed in percentages, were:

Academic responsibilities in departments were:	Clinical		Preclinical	
	1957	1958	1957	1958
In balance	35	56	68	79
Not in balance	58	41	26	15
Not specified	7	3	6	6
Total	100	100	100	100
Total department heads	(133)	(119)	(348)	(303)

Except for the attrition, these responses came from the same individuals. While the data appear to indicate a shift toward a more optimistic view, the year that intervened seems too short a period to have permitted so decided a change. It is probable that differences in the wording of the questions on the two forms contributed to the discrepancy. No doubt the response error inevitable in a study of this nature played a part also.

D. Role of the Faculty Member in the Fellowship System

1. As Past Fellows

a. Extent and Duration of Fellowship Support (Table 112)

More of the physicians than of the Ph.D.'s had held fellowships in the past, and the duration of fellowship support was a little longer for M.D.'s.

The clinical departments, with a preponderance of physicians on their faculties, had a correspondingly higher proportion of fellowship alumni.

b. Role of Past Fellows in Teaching

The 1,121 past fellows in our sample appeared to be carrying their share of the teaching load. They were not found any more frequently than the others in posts where teaching was excluded or optional. This analysis is not included in Appendix V, but is summarized below in terms of the percentages for whom teaching responsibilities were required, optional, or excluded:

	Clinical departments		Preclinical departments	
	Past fellows	Non-fellows	Past fellows	Non-fellows
Required	83	84	87	91
Optional	14	12	10	7
Excluded	2	3	3	2
Not specified	1	1	—	—
Total	100	100	100	100
Total faculty members*	(495)	(512)	(626)	(1035)

Analysis of the academic ranks held by past fellows and non-fellows in our sample provided no evidence that past fellows differed from the remainder of the group with respect to rank. (This analysis therefore was omitted from Appendix V.)

c. Participation in Research (Table 113)

There is some indication that former postdoctoral fellows were spending more time in research than those who had not had fellowship experience. To summarize, the percentages of fellows and non-fellows who were spending at least half of their time in research were:

	Fellows	Non-fellows
Clinical	53	31
Preclinical	83	70

d. Their Attitudes Toward Their Own Academic Responsibilities

Past fellows and non-fellows among the faculty sample were equally satisfied with the distribution of their time among their several academic duties. Where they expressed a desire to alter the distribution of their time, the pattern of response of past fellows and those without such experience was identical.

2. As Supervisors of the Present Generation of Fellows (Table 114)

Clinicians were playing a larger role as fellowship supervisors than those holding the Ph.D. degree. In the clinical departments the small group of faculty members holding both doctorates were more in demand percentage-wise than either group to accept postdoctoral fellows under their tutelage. The percentages of each degree group responsible for supervising fellows were as follows:

	M.D.	Ph.D.	Both
Clinical Departments			
Responsible for guiding fellows	34	15	54
Guiding no fellows	66	85	46
Total	100	100	100
Total clinical faculty	(936)	(65)	(67)

* The 125 persons who did not specify whether they had held a fellowship are omitted.

	M.D.	Ph.D.	Both
<i>Preclinical Departments</i>			
Responsible for guiding fellows	32	20	33
Guiding no fellows	68	80	67
Total	100	100	100
Total preclinical faculty	(286)	(1274)	(165)

The 366 supervisors in the clinical departments indicated they had about 760 fellows in their laboratories (just over two fellows apiece). Some 650 fellows were working under the guidance of the 395 members of the preclinical staffs, or an average of less than two fellows per supervisor. Since we have covered only two clinical departments, and our sample of preclinical departments is more adequate, this suggests that more fellows were working in the clinical departments of the medical schools than in the preclinical departments. This conclusion is not borne out by the locations of 1956-1957 fellows, who were about equally divided between clinical and preclinical departments (see Table 17). These are not strictly comparable data, since the faculty questionnaire dealt with the situation in 1957-1958. Moreover, the 1956-1957 fellows discussed in Section II were limited to those appointed by twenty-two national granting agencies; faculty members were not asked to make any distinction between fellowships awarded in national competition and those awarded locally by the schools themselves. Here again, the question of the definition of the term "fellowship" arises. Some people who would be termed "clinical trainees" under the definition on page 1421 may have been regarded as "postdoctoral research fellows" by clinical faculty members. If so, the figures for clinical and preclinical departments cannot be precisely compared.

a. Faculty Ranks of Fellowship Supervisors (Table 114)

Fellows tended to concentrate under the supervision of faculty members in the top academic echelons. The numbers and percentages of professors and department heads as compared with other faculty members who were supervising fellows were:

FACULTY RANK	Clinical departments		Preclinical departments	
	N	%	N	%
Professors and/or chairmen	148	50	210	39
Associate professors and below	218	28	185	16
Total guiding fellows	366	34	395	23

b. Teaching Requirements

There were 65 people whose positions excluded them from teaching responsibilities. Although they apparently were devoting their full energies to research, only three of them were serving as supervisors of research fellows.

c. Source of Salary (Table 115)

Most of those who had postdoctoral fellows under their supervision were supported by the regular university budget (615 out of 761, or about 80%). It is interesting to note, however, that faculty members who reported that they were supported by fellowship or research grant funds were sharing this responsibility. Indeed, in proportion to their numbers, they were almost as likely to have fellows under their supervision as were faculty members supported by the regular university budget. This cannot be interpreted to mean that junior fellows were guiding the destinies of their peers. The definition of "fellowship support" on the faculty questionnaire was broad, including

"scholar grants, faculty level awards, and established investigatorships." It is probable that the "fellows" who were supervising other fellows were in these categories.

3. *As Current Fellows*

a. *Role of Fellows in Teaching* (Tables 115-117)

We have identified a group of 128 persons who were supported solely or primarily through fellowships from extra-university sources. Their role in the supervision of research fellows is mentioned above. In Table 116, their academic ranks are compared with those held by personnel paid from the regular budget and from grant funds. Both grant and fellowship-supported personnel tended to be concentrated at the assistant professorship level.

Table 117 provides further data on the part these advanced fellows played in medical school teaching. Their contribution, while not comparable to that of the regular faculty, was substantial. Ninety-two of the 128 (72%) were required to teach; only 10 (8%) were excluded from teaching. The following table shows other phases of their teaching activities:

TEACHING RESPONSIBILITIES	Clinical departments		Preclinical departments	
	N	%	N	%
Required to teach	35	64	57	78
Responsible for organization and conduct of courses	24	44	34	47
Supervisors of graduate students	15	27	39	53
Supervisors of postdoctoral fellows	16	29	23	32
Total	55	100	73	100

Grant-supported personnel also carried appreciable teaching responsibility. Their teaching loads were comparable to those of fellows in the clinical departments, but somewhat lighter than those of fellows in the preclinical departments.

b. *Their Role in Research* (Tables 118-119)

The 128 current fellows found time to do considerable research, despite their teaching schedules (Table 118). In general, they spent about as much of their time in the laboratory as those employed under grants, and considerably more than did faculty members who were paid from the regular budget. The percentages of each group spending more than half of their time in research were:

	Clinical departments	Preclinical departments
Faculty on regular budget	13	30
Grant personnel	57	83
Fellows	64	74

Virtually all of the fellows and grant-supported personnel spent at least half of their time in research in the preclinical departments; in the clinical departments the percentages were 85% for fellows and 76% for those working under grants. It would seem that while the medical schools were utilizing and developing the teaching skills of these fellows, they were also making every effort to provide opportunity for experience in research commensurate with their status as senior fellows or scholars.

Table 119 indicates that 74% of the fellows in the preclinical departments and 66% of those in the clinical departments had received research grants for the direction of which they were responsible. These advanced fellows served as principal investigators for research grants or contracts almost as frequently as did the regular faculty and more often than those whose salaries came from grant funds.

c. Their Satisfaction with the Distribution of Their Time (Table 120)

Seventy-six per cent of the fellows, whether in clinical or preclinical departments, were satisfied with the distribution of their time among teaching, research, clinical, and administrative activities. The general level of satisfaction in the clinical departments was appreciably lower than this (55%), and was higher for fellows than any other group. This tends to confirm our impression that the clinical departments were making an effort to provide their senior fellows with a climate and opportunity for further development as scientists. When they were asked whether academic responsibilities were in balance for the department as a whole, the responses of fellows agreed with those of regular faculty members.

E. Opinions of Department Heads on Problems in the Recruitment of Academic Personnel (Tables 121-122)

In the initial questionnaire (1957), departmental chairmen were asked whether they had regularly budgeted positions on their staffs for the current academic year (1956-1957) which they did not fill, but would like to have filled. The responses, shown in Table 121, revealed a total of 384 vacancies in 219 departments. Clinical departments were finding more difficulty than preclinical departments in filling their vacancies:

	Clinical departments	Preclinical departments
Number of vacancies	253	131
Number of departments with vacancies	132	87
Average number of vacancies per department	1.9	1.5
Total departments	375	348
Per cent of all departments with one or more vacancies they wanted to fill	35%	25%

More complete information on unfilled positions on medical school staffs is available for the period 1955-1960.⁴ Our data are given in Table 121 to provide background for the opinions of department heads on subsequent questions related to personnel recruitment. (Our 1956-1957 figures are very close for the preclinical departments, but the A.M.A. reports appreciably more vacancies on the staffs of departments of pathology, medicine, psychiatry, and surgery than were shown on our questionnaires.)

Department heads who had unfilled vacancies were asked whether there was a reasonable number of candidates for their positions, and whether the candidates that appeared were well qualified. Here are their answers:

⁴ Wiggins, et al. *Op. cit.* J.A.M.A., 174:1435, November 12, 1960.

	Clinical	Preclinical
Per cent of departments with vacancies reporting a reasonable number of candidates	28	40
Per cent of chairmen who regarded the candidates that appeared as well qualified	42	39
Total departments reporting one or more vacancies they wanted to fill	(132)	(87)

Clinical department heads apparently were more impressed with the quality than the quantity of their candidates.

Table 122 shows the factors that department heads believed had influenced suitable candidates against accepting positions in their departments. Chairmen of clinical departments had encountered little competition with industry or Government, but nearly half of them believed that the practice of medicine had lured well-qualified M.D.'s away from their departments. Heads of the preclinical departments thought that their difficulties could be ascribed to all three factors, but 28% of them regarded the practice of medicine as a factor attracting physicians away from academic careers. In addition, some preclinical chairmen felt that opportunities for research and teaching in the clinical departments had enticed promising personnel from faculty positions in their departments. Heads of clinical departments felt little competition from the opportunities in preclinical departments. Salary was regarded as an obstacle to employing acceptable candidates by 15% of preclinical and 19% of clinical chairmen.

When they were asked whether their 1955-1956 fellows encountered difficulty in finding academic positions, only six department heads answered in the affirmative.

Of the preclinical chairmen, 23% (80 out of a total of 348) reported that their departments had responsibilities in the service functions of the hospital (e.g., the supervision of the activities of a metabolic, respiratory, electrocardiographic, or clinical-chemical laboratory). Forty-two per cent of those without these responsibilities (109 out of 258) regarded such functions as desirable. Virtually all who answered in the affirmative agreed that this would help attract qualified persons to careers in basic disciplines. Within the clinical fields, almost two-thirds of the chairmen (238 out of 375) reported that their departments had service responsibilities of this kind.

Clinical chairmen were then asked whether a full-time member of a basic science department, board-certified and holding the Ph.D. as well as M.D. degree, would be acceptable for part-time clinical duties in their departments. Ninety-three per cent replied that such a person would be acceptable and 82% said they would welcome such an arrangement.

Dr. Arthur S. Cain, Jr.
2530 Ridge Avenue
Evanston, Illinois

Lois G. Bowen
2101 Constitution Ave., N. W.
Washington, D.C.

QUESTIONNAIRES USED IN THE SURVEY

Covering Letter for Questionnaires to Fellows
(Exhibits 1, 2, and 3)

TELEPHONE: EXECUTIVE 3-8100

CABLE ADDRESS: NARECO
WASHINGTON, D. C.NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

2101 CONSTITUTION AVENUE, WASHINGTON 25, D. C.

DIVISION OF MEDICAL SCIENCES

The number of good fellowships for the support of medical scientists, at least in the early years of their careers, has increased greatly in the last ten years. This rapid development poses questions which must be answered if the best interests of the medical sciences and of the fellows themselves are to be met, and the leadership of academic medicine sustained.

The National Academy of Sciences-National Research Council has had a primary interest in fellowships in the medical sciences since the very first such awards were made more than thirty-five years ago. Through its Medical Fellowship Board, the Academy-Research Council, looking to the future, is now undertaking a study of personnel support in the medical sciences and the influence of such support on the medical schools. The study is intended to make possible a general appraisal of accomplishments to date and serve as a basis for future planning and improvement. It will determine the direction and emphasis of our own activities, and the report will be available for use by all interested agencies.

We turn to you now for help with what we regard as the most important part of the study: the information that can be provided only by those who have held fellowships. In so doing, we are taking into consideration the data made available to us by all of the fellowship-awarding agencies, both governmental and private, whose cooperation has been of fundamental importance to our survey since its beginning some months ago. The necessary supplemental information is indicated on the enclosed questionnaire, which is arranged in check-list form to minimize the demand on your time. Your considered completion of the questionnaire is of the utmost importance to our study and will be appreciated. I do hope you will give it your early attention.

Let me assure you that the information you provide will be held in strictest confidence. It will not be analyzed in such a way as to identify you, your institution, or your supporting agency.

Please accept our thanks for your interest and help.

Very sincerely yours,
Arthur S. Cain, Jr., M.D.
Director of the Survey

EXHIBIT 1

CONFIDENTIAL

MEDICAL FELLOWSHIP BOARD
NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL
2101 Constitution Avenue, N.W., Washington 25, D.C.

A Request for Information from
Medical Scientists Who Have Held Postdoctoral Fellowships

I. YOUR FELLOWSHIP HISTORY

- A. For how many years did you hold a postdoctoral research fellowship?.....
(Exclude present and senior fellowships)
1. Under how many agencies?.....
- B. Have you held a long-term (senior) fellowship? Yes ☐ No ☐
1. For how many years?.....
- C. Do you now hold a fellowship? Yes ☐ No ☐
1. If so, is your present appointment:
- a. A postdoctoral research fellowship? ☐
- b. A long-term senior fellowship? ☐
- c. Other? ☐.....
(Please specify).....
2. For how many years was it awarded?.....

II. YOUR PROFESSIONAL EXPERIENCE

- A. Please describe your present post:
1. Type of institution (Check as many as applicable):
- a. Medical school ☐
- b. Other division of university ☐
- c. Hospital ☐
- d. Research institute (nonindustrial) ☐
- e. Industry ☐
- f. Federal government ☐
- g. Private practice of medicine ☐
- h. Other ☐.....
(Please specify).....
2. Department..... Title.....
- B. If you do not now hold a full-time academic staff position, have you ever held such a post? Yes ☐ No ☐
- If so, please indicate:
1. Rank..... Dept.....
2. For how many years?.....

III. YOUR PLANS FOR THE FUTURE**A. Immediate Future**

1. Would you like additional fellowship support at any time in the future?
Yes ☐ No ☐
- a. If so, of what type?
- (1) A postdoctoral research fellowship ☐
- (2) A long-term senior fellowship ☐
- (3) Other ☐.....
(Please specify).....
- b. For how many years?.....
2. If you are not now in a full-time academic staff position, would you consider such an appointment if it assured an acceptable balance between research, teaching, and administrative duties? Yes ☐ No ☐
- a. For what faculty rank do you consider yourself qualified?
- (1) Professor ☐ (3) Asst. Prof. ☐
- (2) Assoc. Prof. ☐ (4) Instructor ☐
- b. What is the minimum salary you would accept? \$.....
- c. In what department (discipline) would you seek the appointment?
.....

d. In what division of the university would you seek the appointment?

(1) In the medical school ☐

(2) In another division ☐

(Please specify)

3. Have you ever been offered a full-time academic staff position that you did not accept? Yes ☐ No ☐

a. Please check any of the following which influenced your decision:

(1) Salary ☐

(2) Future potential of the position ☐

(3) Demands of the position:

Amount of teaching ☐

Amount of administration ☐

Amount of research ☐

(4) Geographic location ☐

(5) Prestige of the department or institution concerned ☐

(6) Adequacy of the physical facilities ☐

(7) Other ☐

(Please specify)

B. Ultimate Goals

1. If economic rewards were equal, please check the area in which you would prefer to make your career (Check only one):

a. Full-time university employment with a good balance between research and other responsibilities of academic life ☐

b. Full-time research without other responsibilities in:

(1) A medical school ☐

(2) Another division of the university ☐

(3) A research institute ☐

(4) Other ☐

(Please specify)

(Please specify)

c. Clinical investigation and medical practice in a full-time academic position ☐

d. Full-time private practice of medicine ☐

2. Under the realities of present-day economics, what is your choice among these alternatives? a. ☐ b. ☐ c. ☐ d. ☐

3. If the above (1-a, -b, -c, -d) does not include your primary choice for a career, what, considering economic realities, is that choice? ☐

4. Would you consider a position, with suitable rank and salary, in the school from which you received your doctor's degree? Yes ☐ No ☐

5. Please indicate in which of the following medical schools you feel your requirements for your future career could be met (check as many as you wish in each column):

	Might Consider	Would Prefer	Insufficient Information		Might Consider	Would Prefer	Insufficient Information
Boston University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Johns Hopkins University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harvard Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Maryland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tufts University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	George Washington University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dartmouth Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Georgetown University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Vermont	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Howard University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yale University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Virginia (Richmond)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Albany Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Virginia (Charlottesville)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Buffalo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bowman Gray School of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Columbia University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Duke University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cornell University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of North Carolina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Albert Einstein College of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of South Carolina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New York Medical College (Flower and Fifth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emory University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New York University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Georgia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Rochester	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Alabama	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of New York (New York City)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Mississippi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of New York (Syracuse)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Louisiana State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seton Hall College of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tulane University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hahnemann Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Florida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jefferson Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Miami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temple University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Meharry Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Pennsylvania	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Tennessee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Pittsburgh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Woman's Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

	Might Consider	Would Prefer	Insufficient Information		Might Consider	Would Prefer	Insufficient Information
Vanderbilt University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Wisconsin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Louisville	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Marquette University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Arkansas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Minnesota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baylor University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Washington University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Texas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(St. Louis)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical Branch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	St. Louis University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Galveston)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Missouri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Southwestern Medical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Kansas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
School (University of	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Nebraska	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Texas, Dallas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Creighton University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Oklahoma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of South	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Michigan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dakota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wayne State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of North	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Cincinnati	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dakota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ohio State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Colorado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Western Reserve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Utah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Oregon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of West	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Washington	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Virginia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of California	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Northwestern University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(San Francisco)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Chicago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of California	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Illinois	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(Los Angeles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chicago Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stanford University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stritch School of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Southern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Loyola University)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	California	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indiana University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	College of Medical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of Iowa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evangelists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV. YOUR APPRAISAL OF YOUR PREPARATION FOR YOUR ULTIMATE CAREER

A. Fellowship Experience

- Do you consider a change to another laboratory some time after the first year of a fellowship desirable? Yes ☐ No ☐ Why?
- a. In the United States? Yes ☐ No ☐
- b. Abroad? Yes ☐ No ☐
- Did your fellowship include teaching responsibilities?
 - No ☐
 - Very little ☐
 - To a considerable extent ☐
- Was this teaching experience:
 - Limited to laboratory assistance? Yes ☐ No ☐
 - A part of the primary lecture schedule of the department? Yes ☐ No ☐
 - Guided, criticized, planned and improved by senior department members? Yes ☐ No ☐
 - Beneficial to your research and training? Yes ☐ No ☐
- If there was no teaching experience, or if it was minor, haphazard, or unsupervised, do you consider this a disadvantage that should have been corrected to improve your preparation for the future? Yes ☐ No ☐
- Could there have been other improvements in your fellowship that would have enhanced your future? Yes ☐ No ☐
(Please specify)
- Do you feel that your fellowship gave you an advantage in the competition for permanent career positions? Yes ☐ No ☐
- Was your fellowship taken at the optimum time in your career? Yes ☐ No ☐
- Was the term of your fellowship long enough to accomplish your purpose? Yes ☐ No ☐
 - If not, did you feel the necessity to seek a position rather than continue as a fellow? Yes ☐ No ☐
- Has your research program been interrupted significantly since the termination of your fellowship? Yes ☐ No ☐ Permanently? Yes ☐ No ☐
- If it has not been interrupted, has the direction of your research changed significantly since your fellowship? Yes ☐ No ☐
- Did you feel pressure (other than self-imposed) to publish results of your fellowship research? Yes ☐ No ☐
 - Was the choice of your research project influenced by a desire to have something published at the end of the year? Yes ☐ No ☐
 - Did your sponsor share this desire? Yes ☐ No ☐
- In preparing the results of your research as a fellow for publication, were you handicapped in any way by:
 - Lack of time in which to prepare the publication? Yes ☐ No ☐
 - Lack of adequate expert consultation? Yes ☐ No ☐

- c. Difficulty with the technique of formulating a written presentation?

Yes ☐ No ☐

- (1) Would course work in composition, literature, or methods of writing have been of value to you? Yes ☐ No ☐

13. Has your fellowship experience:

- a. Confirmed your dedication to research? Yes ☐ No ☐

- b. Influenced you NOT to continue in research? Yes ☐ No ☐

- c. Influenced you to seek a career combining research and other academic responsibilities? Yes ☐ No ☐

- d. Influenced your career in other ways? Yes ☐ No ☐

(Please specify)

B. Formal Education

1. Please check the degree(s) you hold: Ph.D. ☐ M.D. ☐ Sc.D. ☐

2. Would you be in a better position to pursue your career if you held both the M.D. and the Ph.D. degrees? Yes ☐ No ☐

- a. Would this improve your economic potential? Yes ☐ No ☐

- b. Your professional potential? Yes ☐ No ☐

How?

3. If it were possible without financial burden for you now to enroll in graduate or medical school and meet in full the requirements for the second degree, would you take advantage of that opportunity? Yes ☐ No ☐

4. Did you enroll in any formal courses of study during your fellowship?

Yes ☐ No ☐

- a. If so, in what courses?

- b. Have they been beneficial to you? Yes ☐ No ☐

In what way?

5. If your fellowship did not permit you to enroll in such courses, do you feel that it should have been permitted? Yes ☐ No ☐

- a. In what courses would you have enrolled?

C. Clinical Experience (If you hold an M.D. degree, will you please answer these questions):

1. Have you completed an internship? Yes ☐ No ☐

2. Have you served as a resident? Yes ☐ No ☐

- a. In what clinical field(s)?

- b. For how many years?

3. Are you a Diplomate of an American Specialty Board? Yes ☐ No ☐

- a. If not, do you plan to seek such certification? Yes ☐ No ☐

4. If you completed an internship or held a residency:

- a. Was your clinical experience of value to you during your fellowship in:

- (1) Planning your research? Yes ☐ No ☐

- (2) Conducting your research? Yes ☐ No ☐

- (3) Interpreting your results? Yes ☐ No ☐

- b. Did the experience influence the direction of your research as a fellow?

Yes ☐ No ☐

- c. Did the clinical experience influence your plans for the future by:

- (1) Interesting you in an academic career combining teaching and investigative work in:

- (a) A basic science? Yes ☐ No ☐

- (b) A clinical science? Yes ☐ No ☐

Which clinical field?

- (2) Creating a definite interest in the full-time private practice of medicine?

Yes ☐ No ☐

- d. Did your clinical experience handicap you in any way as a research fellow?

Yes ☐ No ☐

If possible, will you please explain your answer to this question?

The Medical Fellowship Board will welcome your additional comments and suggestions:

CONFIDENTIAL**EXHIBIT 2**

MEDICAL FELLOWSHIP BOARD
NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL
 2101 Constitution Avenue, N.W., Washington 25, D.C.

A Request for Information from
Postdoctoral Fellows in the Medical Sciences

I. YOUR FELLOWSHIP HISTORY**A. Present Fellowship**

1. When did you begin your present fellowship appointment?.....
 (Month) (Year)
2. When does it terminate?.....
 (Month) (Year)
3. Is your present appointment a renewal of a previous award? Yes ☐ No ☐
 When did you begin the original award?.....
 (Month) (Year)

B. Previous Fellowships

1. Have you held previous postdoctoral research fellowships from other sponsors?
 Yes ☐ No ☐
 a. For how many years?.....
 b. Under how many agencies?.....

II. YOUR PLANS FOR THE FUTURE**A. Immediate Future**

1. Do you want to continue as a fellow at the end of your present appointment?
 Yes ☐ No ☐ Undecided ☐
 a. If so, for how many years?.....
2. As alternatives to extended fellowship support, would you consider:
 - a. A full-time academic appointment which assured an acceptable balance between research and teaching? Yes ☐ No ☐
 - b. Employment under a research grant or contract with neither the duties nor the privileges of a regular academic post? Yes ☐ No ☐
 - c. Which of the above would you prefer? a. ☐ b. ☐
3. If you should decide to seek a full-time academic appointment at the end of your present fellowship,
 - a. For what faculty rank do you consider yourself qualified?
 Professor ☐ Assistant Professor ☐
 Associate Professor ☐ Instructor ☐
 - b. What is the minimum salary you would accept? \$.....
 - c. In what department (discipline) would you seek the appointment?

 - d. In what division of the university would you seek the appointment?
 (1) In the medical school ☐
 (2) In another division ☐
 (Please specify)
4. Have you ever held a full-time academic staff position? Yes ☐ No ☐
 If so, please indicate:
 - a. Rank..... Department.....
 - b. For how many years?.....
5. If not, have you ever been offered a full-time academic staff position that you did not accept? Yes ☐ No ☐
 a. Please check any of the following which influenced your decision:
 - (1) Salary ☐
 - (2) Future potential of the position ☐
 - (3) Demands of the position:
 - Amount of teaching ☐
 - Amount of administration ☐
 - Amount of research ☐

- (4) Geographic location ☐
 (5) Prestige of the department or institution concerned ☐
 (6) Adequacy of the physical facilities ☐
 (7) Other ☐

(Please specify)

B. Ultimate Goals

1. If economic rewards were equal, please check the area in which you would ultimately prefer to make your career (Check only one):

a. Full-time university employment with a good balance between research and other responsibilities of academic life ☐

b. Full-time research without any other responsibilities in:

- (1) A medical school ☐
 (2) Another division of the university ☐
 (3) A research institute ☐

(Please specify)

(4) Other ☐

(Please specify)

c. Clinical investigation and medical practice in a full-time academic position ☐

d. Full-time private practice of medicine ☐

2. Under the realities of present-day economics, what is your choice among these alternatives? a. ☐ b. ☐ c. ☐ d. ☐

3. If the above (1-a, -b, -c, -d) does not include your primary choice for your career, what, considering economic realities, is that choice?

4. Would you consider a position, with suitable rank and salary, in the school from which you received your doctor's degree? Yes ☐ No ☐

5. Please indicate in which of the following medical schools you feel your requirements for your future career could be met (check as many as you wish in each column):

	Might Consider	Would Prefer	Insufficient Information		Might Consider	Would Prefer	Insufficient Information
Boston University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of South Carolina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harvard Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emory University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tufts University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Georgia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dartmouth Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Alabama	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Vermont	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Mississippi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yale University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Louisiana State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Albany Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tulane University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Buffalo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Florida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Columbia University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Miami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cornell University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	McHarr Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Albert Einstein College of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Tennessee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New York Medical College (Flower and Fifth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vanderbilt University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New York University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Louisville	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Rochester	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Arkansas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of New York (New York City)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Baylor University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of New York (Syracuse)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Texas Medical Branch (Galveston)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seton Hall College of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Southwestern Medical School (University of Texas, Dallas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hahnemann Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Oklahoma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jefferson Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Michigan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temple University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wayne State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Pennsylvania	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Cincinnati	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Pittsburgh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ohio State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woman's Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Western Reserve University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Johns Hopkins University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of West Virginia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Maryland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Northwestern University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
George Washington University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Chicago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Georgetown University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Illinois	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Howard University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chicago Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical College of Virginia (Richmond)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stritch School of Medicine (Loyola University)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Virginia (Charlottesville)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indiana University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bowman Gray School of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	State University of Iowa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duke University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Wisconsin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of North Carolina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Marquette University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				University of Minnesota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Might Consider	Would Prefer	Insufficient Information		Might Consider	Would Prefer	Insufficient Information
Washington University (St. Louis)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Utah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
St. Louis University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Oregon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Missouri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Washington	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Kansas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of California (San Francisco)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Nebraska	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of California (Los Angeles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Creighton University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stanford University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of South Dakota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Southern California	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of North Dakota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	College of Medical Evangelists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Colorado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

III. YOUR APPRAISAL OF YOUR PREPARATION FOR YOUR ULTIMATE CAREER

A. Fellowship Experience

- Do you consider a change to another laboratory some time after the first year of a fellowship desirable? Yes ☐ No ☐ Why?
 - In the United States? Yes ☐ No ☐
 - Abroad? Yes ☐ No ☐
 - Do you feel that you are under pressure (other than self-imposed) to publish results of your research? Yes ☐ No ☐
 - Was the choice of your research project influenced by a desire to have something published at the end of the year? Yes ☐ No ☐
 - Did your sponsor share this desire? Yes ☐ No ☐
 - Does your fellowship include teaching responsibilities?
No ☐ Very Little ☐ To a considerable extent ☐
 - Is this teaching experience:
 - Limited to laboratory assistance? Yes ☐ No ☐
 - A part of the primary lecture schedule of the department? Yes ☐ No ☐
 - Guided, criticized, planned and improved by senior department members?
Yes ☐ No ☐
 - Beneficial to your research and training? Yes ☐ No ☐
 - If there is no teaching experience, or if it is minor, haphazard, or unsupervised, do you consider this a disadvantage that should be corrected to improve your preparation for the future? Yes ☐ No ☐
 - Could there be other improvements in your fellowship which would enhance your future? Yes ☐ No ☐
- (Please specify)
- Do you feel that your fellowship will give you an advantage in the competition for permanent career positions? Yes ☐ No ☐

B. Formal Education

- Please check the degree(s) you hold: Ph.D. ☐ M.D. ☐ Sc.D. ☐
 - Are you working toward a degree under your present fellowship? Yes ☐ No ☐
 - If so, what degree?
- Would you be in a better position to pursue your intended career if you held both the M.D. and the Ph.D. degrees? Yes ☐ No ☐
 - Would this improve your economic potential? Yes ☐ No ☐
 - Your professional potential? Yes ☐ No ☐

How?
- If it were possible without financial burden for you now to enroll in graduate or medical school and meet in full the requirements for the second degree, would you take advantage of that opportunity? Yes ☐ No ☐
- Have you enrolled in any formal courses of study during your fellowship?
Yes ☐ No ☐
 - If so, in what courses?
 - Have they been beneficial to you? Yes ☐ No ☐
 - In what way?
- If your fellowship did not permit you to enroll in such courses, do you feel that this would be desirable? Yes ☐ No ☐
 - In what courses would you enroll if approval were obtained?

C. Clinical Experience (If you hold an M.D. degree, will you please answer these questions):

1. Have you completed an internship? Yes ☐ No ☐
2. Have you served as a resident? Yes ☐ No ☐
 - a. In what clinical field(s)?
 - b. For how many years?
3. Are you a Diplomate of an American Specialty Board? Yes ☐ No ☐
 - a. If not, do you plan to seek such certification? Yes ☐ No ☐
4. If you completed an internship or held a residency:
 - a. Are you finding your clinical experience of value to you during your fellowship in:
 - (1) Planning your research? Yes ☐ No ☐
 - (2) Conducting your research? Yes ☐ No ☐
 - (3) Interpreting your results? Yes ☐ No ☐
 - b. Has the experience influenced the direction of your research as a fellow? Yes ☐ No ☐
 - c. Has the clinical experience influenced your plans for the future by:
 - (1) Interesting you in an academic career combining teaching and investigative work in:
 - (a) A basic science? Yes ☐ No ☐
 - (b) A clinical science? Yes ☐ No ☐
 - Which clinical field?
 - (2) Creating a definite interest in the full-time private practice of medicine? Yes ☐ No ☐
 - d. Do you feel that your clinical experience handicaps you in any way as a fellow? Yes ☐ No ☐

If possible, will you please explain your answer to this question.....

.....

.....

The Medical Fellowship Board will welcome your additional comments and suggestions:

CONFIDENTIAL**EXHIBIT 3**

MEDICAL FELLOWSHIP BOARD
NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL
2101 Constitution Avenue, N.W., Washington 25, D.C.

A Request for Information from
Advanced Fellows in the Medical Sciences

I. YOUR FELLOWSHIP HISTORY**A. Present Fellowship**

1. When did you begin your present fellowship appointment?.....
(Month) (Year)
2. When does it terminate?.....
(Month) (Year)
3. Is your present appointment a renewal of a previous award? Yes ☐ No ☐
When did you begin the original award?.....
(Month) (Year)

B. Previous Fellowships

1. Did you hold a postdoctoral research fellowship prior to your present fellowship?
Yes ☐ No ☐
 - a. For how many years?.....
 - b. Under how many agencies?.....

II. YOUR PLANS FOR THE FUTURE**A. Immediate Future**

1. Do you want to continue as a fellow at the end of your present appointment?
Yes ☐ No ☐ Undecided ☐
 - a. If so, for how many years?.....
2. As alternatives to extended fellowship support, would you consider:
 - a. A full-time academic appointment which assured an acceptable balance between research and teaching? Yes ☐ No ☐
 - b. Employment under a research grant or contract with neither the duties nor the privileges of a regular academic post? Yes ☐ No ☐
 - c. Which of the above would you prefer? a. ☐ b. ☐
3. If you should decide to seek a full-time academic appointment at the end of your present fellowship,
 - a. For what faculty rank do you consider yourself qualified?
Professor ☐ Assistant Professor ☐
Associate Professor ☐ Instructor ☐
 - b. What is the minimum salary you would accept? \$.....
 - c. In what department (discipline) would you seek the appointment?.....
 - d. In what division of the university would you seek the appointment?
 - (1) In the medical school ☐
 - (2) In another division ☐.....
(Please specify)
4. Have you ever held a full-time academic staff position? Yes ☐ No ☐
If so, please indicate:
 - a. Rank..... Department.....
 - b. For how many years?.....
5. If not, have you ever been offered a full-time academic staff position that you did not accept? Yes ☐ No ☐
 - a. Please check any of the following which influenced your decision:
 - (1) Salary ☐
 - (2) Future potential of the position ☐

- (3) Demands of the position:
 Amount of teaching ☐
 Amount of administration ☐
 Amount of research ☐
 (4) Geographic location ☐
 (5) Prestige of the department or
 institution concerned ☐
 (6) Adequacy of the physical facilities ☐
 (7) Other ☐

(Please specify)

B. Ultimate Goals

1. If economic rewards were equal, please check the area in which you would ultimately prefer to make your career (Check only one):
 a. Full-time university employment with a good balance between research and other responsibilities of academic life ☐
 b. Full-time research without any other responsibilities in:
 (1) A medical school ☐
 (2) Another division of the university ☐
 (3) A research institute ☐
 (4) Other ☐
 (Please specify)
 c. Clinical investigation and medical practice in a full-time academic position ☐
 2. Under the realities of present-day economics, what is your choice among these alternatives? a. ☐ b. ☐ c. ☐
 3. If the above (1-a, -b, -c) does not include your primary choice for your career, what, considering economic realities, is that choice?
 4. Would you consider a position, with suitable rank and salary, in the school from which you received your doctor's degree? Yes ☐ No ☐
 5. Please indicate in which of the following medical schools you feel your requirements for your future career could be met (check as many as you wish in each column):

	Might Consider	Would Prefer	Insufficient Information		Might Consider	Would Prefer	Insufficient Information
Boston University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bowman Gray School of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harvard Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Duke University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tufts University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of North Carolina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dartmouth Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of South Carolina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Vermont	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Emory University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yale University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Georgia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Albany Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Medical College of Alabama	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Buffalo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Mississippi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Columbia University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Louisiana State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cornell University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tulane University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Albert Einstein College of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Florida	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New York Medical College (Flower and Fifth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Miami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New York University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Meharry Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Rochester	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Tennessee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of New York (New York City)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vanderbilt University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of New York (Syracuse)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Louisville	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seton Hall College of Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Arkansas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hahnemann Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Baylor University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jefferson Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Texas Medical Branch (Galveston)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temple University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Southwestern Medical School (University of Texas, Dallas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Pennsylvania	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Oklahoma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Pittsburgh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Michigan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Woman's Medical College	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wayne State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Johns Hopkins University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Cincinnati	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Maryland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ohio State University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
George Washington University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Western Reserve University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Georgetown University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of West Virginia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Howard University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Northwestern University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical College of Virginia (Richmond)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Chicago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Virginia (Charlottesville)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

	Might Consider	Would Prefer	Insufficient Information		Might Consider	Would Prefer	Insufficient Information
University of Illinois	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of South Dakota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chicago Medical School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of North Dakota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stritch School of Medicine (Loyola University)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Colorado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indiana University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Utah	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State University of Iowa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Oregon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Wisconsin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Washington	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marquette University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of California (San Francisco)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Minnesota	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of California (Los Angeles)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Washington University (St. Louis)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stanford University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
St. Louis University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	University of Southern California	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Missouri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	College of Medical Evangelists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Kansas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
University of Nebraska	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Creighton University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

III. YOUR APPRAISAL OF YOUR PREPARATION FOR YOUR ULTIMATE CAREER

A. Fellowship Experience

- Do you consider a change to another laboratory some time after the first year of a fellowship desirable? Yes ☐ No ☐ Why?
- In the United States? Yes ☐ No ☐
- Abroad? Yes ☐ No ☐
- Do you feel that you are under pressure (other than self-imposed) to publish results of your research? Yes ☐ No ☐
 - Was the choice of your research project influenced by a desire to have something published within the period of the fellowship? Yes ☐ No ☐
 - Did your sponsor share this desire? Yes ☐ No ☐
- Does your fellowship include teaching responsibilities? No ☐ Very Little ☐ To a considerable extent ☐
- Is this teaching experience:
 - Limited to laboratory assistance? Yes ☐ No ☐
 - A part of the primary lecture schedule of the department? Yes ☐ No ☐
 - Guided, criticized, planned and improved by senior department members? Yes ☐ No ☐
 - Beneficial to your research and training? Yes ☐ No ☐
- If there is no teaching experience, or if it is minor, haphazard, or unsupervised, do you consider this a disadvantage that should be corrected to improve your preparation for the future? Yes ☐ No ☐
- Could there be other improvements in your fellowship which would enhance your future? Yes ☐ No ☐

..... (Please specify)
- Do you feel that your fellowship will give you an advantage in the competition for permanent career positions? Yes ☐ No ☐
- In preparing the results of your research for publication, now or in previous fellowships, were you handicapped in any way by:
 - Lack of time in which to prepare for publication? Yes ☐ No ☐
 - Lack of adequate expert consultation? Yes ☐ No ☐
 - Difficulty with the technique of formulating a written presentation? Yes ☐ No ☐
 - Would formal course work in composition, literature, or methods of writing have been of value to you? Yes ☐ No ☐
- Has your fellowship experience:
 - Confirmed your dedication to research? Yes ☐ No ☐
 - Influenced you NOT to continue in research? Yes ☐ No ☐
 - Influenced you to seek a career combining research and other academic responsibilities? Yes ☐ No ☐
 - Influenced your career in other ways? Yes ☐ No ☐

..... (Please specify)

B. Formal Education

- Please check the degree(s) you hold: Ph.D. ☐ M.D. ☐ Sc.D. ☐
- Would you be in a better position to pursue your intended career if you held both the M.D. and the Ph.D. degrees? Yes ☐ No ☐

- a. Would this improve your economic potential? Yes ☐ No ☐
 - b. Your professional potential? Yes ☐ No ☐
How?
 3. If it were possible without financial burden for you now to enroll in graduate or medical school and meet in full the requirements for the second degree, would you take advantage of that opportunity? Yes ☐ No ☐
 4. Have you enrolled in any formal courses of study during your fellowship?
Yes ☐ No ☐
 - a. If so, in what courses?
 - b. Have they been beneficial to you? Yes ☐ No ☐
In what way?
 5. If your fellowship does not permit you to enroll in such courses, do you feel that this would be desirable? Yes ☐ No ☐
 - a. In what courses would you enroll if approval were obtained?
- C. Clinical Experience (If you hold an M.D. degree, will you please answer these questions):
1. Have you completed an internship? Yes ☐ No ☐
 2. Have you served as a resident? Yes ☐ No ☐
 - a. In what clinical field(s)?
 - b. For how many years?
 3. Are you a Diplomate of an American Specialty Board? Yes ☐ No ☐
 - a. If not, do you plan to seek such certification? Yes ☐ No ☐
 4. If you completed an internship or held a residency:
 - a. Are you finding your clinical experience of value to you during your fellowship in:
 - (1) Planning your research? Yes ☐ No ☐
 - (2) Conducting your research? Yes ☐ No ☐
 - (3) Interpreting your results? Yes ☐ No ☐
 - b. Has the experience influenced the direction of your research as a fellow?
Yes ☐ No ☐
 - c. Has the clinical experience influenced your plans for the future by interesting you in an academic career combining teaching and investigative work in:
 - (1) A basic science? Yes ☐ No ☐
 - (2) A clinical science? Yes ☐ No ☐Which clinical field?
 - d. Do you feel that your clinical experience handicaps you in any way as a fellow? Yes ☐ No ☐
If possible, will you please explain your answer to this question.....
.....
.....

The Medical Fellowship Board will welcome your additional comments and suggestions:

EXHIBIT 4

TELEPHONE: EXECUTIVE 3-8100

CABLE ADDRESS: NARECO
WASHINGTON, D. C.

NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

2101 CONSTITUTION AVENUE, WASHINGTON 25, D. C.

DIVISION OF MEDICAL SCIENCES

November 29, 1957

A Request for Information from Interns, Residents, and Clinical Trainees

The National Academy of Sciences-National Research Council, through its Medical Fellowship Board, has undertaken a study of the support of personnel in the medical sciences, on a national scale. The study is intended to make possible a critical appraisal of present conditions and provide a sound basis for future planning.

In the thirty-five years since the first Fellowships in the Medical Sciences were awarded, the Academy-Research Council's emphasis has shifted according to the pressing needs of the day, as determined by periodic studies. The present survey represents the most comprehensive re-examination to date. It will determine the direction and emphasis of our future activities in the field of medical education, and the report will be available to other interested agencies.

The needs of the clinical sciences will form an important part of the study, and we turn to you now for the information that only you, the clinical scientists of the future, can provide. Your considered completion of the questionnaire on the following pages is of the utmost importance to our survey, and will be appreciated. I do hope you will give it your early attention.

Let me assure you that the information you give us will not be analyzed in such a way as to identify you or your institution. We are providing an envelope in which you may seal your reply and return it to the officer of your hospital who is helping us with the survey.

Please accept our thanks for your interest and help.

Sincerely yours,

Arthur S. Cain, Jr., M.D.
Director of the Survey

CONFIDENTIAL**A Request for Information from
Interns, Residents, and Clinical Trainees****I. YOUR PROFESSIONAL BACKGROUND**A. Marital status: 1. Single ☐ 2. Married ☐ 3. Number of childrenB. Sex: Male ☐ Female ☐

C. Present position:

1. Intern ☐2. Resident ☐a. In which year? 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐

b. On what service?

3. Clinical Trainee ☐

D. Medical Education:

1. Year of graduation from medical school

2. Are you a graduate of a medical school in the United States? Yes ☐ No ☐3. If not, do you intend to remain permanently in the United States? Yes ☐ No ☐E. Do you hold the Ph.D. degree? ☐ Sc.D.? ☐ Master's? ☐

1. If so, in what field?

F. Have you ever held a predoctoral scholarship or fellowship? (Check as many as applicable):

1. In college ☐ Duration Years Months2. In medical school ☐3. In graduate school ☐

G. Have you had any research training or experience that you regard as significant? (Check as many as applicable):

1. As a medical student ☐ Duration Years Months2. As a graduate student ☐3. During your internship or residency ☐4. As a postdoctoral research fellow ☐

In what field?

5. As a postdoctoral clinical fellow or trainee ☐

In what field?

6. As an employee under a research grant ☐**II. YOUR PREFERENCES FOR YOUR ULTIMATE CAREER**

A. Which of the following careers would you prefer? (Please check only one):

1. A salaried full-time medical school appointment with teaching, research, and clinical responsibilities, but without the privilege of private medical practice ☐

In what department?

2. An essentially full-time salaried medical school position requiring a restricted or limited private practice to supplement your income ☐

In what department?

3. A full-time medical school position in a preclinical department without clinical responsibilities ☐

In what department?

4. A full-time research position without teaching or clinical responsibilities ☐

In what field?

5. A career essentially in private practice with:

a. A part-time teaching appointment in a medical school ☐b. Part-time participation in a research program ☐c. No research or teaching activities ☐6. Other ☐

(Please specify)

B. Does your choice in the preceding question (II-A) represent a change from your preference at the time you graduated from medical school? Yes ☐ No ☐

1. If so, which was your choice at that time?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5a ☐ 5b ☐ 5c ☐ 6 ☐

(These numbers refer to the choices in II-A)

C. Do you foresee any obstacles to pursuing the career you now prefer? Yes ☐ No ☐

If so, please check any of the following that may become obstacles in your particular case:

1. Personal economic pressures requiring early relief ☐2. Insufficient opportunity to obtain all of the training you would need ☐3. Uncertainty concerning the availability of suitable positions when the training is completed ☐4. Other ☐

(Please specify)

D. If you would like to devote a substantial portion of your career to research,

1. Are you inclined toward:
 - a. Research in a clinical science? ☐
 - b. Research in a preclinical science? ☐
 - c. A combination of a and b? ☐
2. Is your interest in research the result of:
 - a. Your previous experience in research? ☐
 - b. Curiosity to investigate problems of special interest to you? ☐
 - c. Association with a particular faculty or staff member whose accomplishments have impressed you? ☐
 - d. Other? ☐

(Please specify)

E. If your present inclination is against the inclusion of research in your career, is this based on:

1. A greater interest in some other area? ☐
2. Your previous experience with research? ☐
3. Economic problems involved in combining research with your other plans? ☐
4. Your assessment of the opportunities in research? ☐
5. Your own observations of the conduct of research projects? ☐
6. Other? ☐

(Please specify)

F. If you would like, eventually, to devote a substantial portion of your time to teaching in a medical school, is this the result of:

1. Previous teaching experience? ☐
2. A desire to participate in the education of physicians? ☐
3. A recognition of the contribution of teaching to:
 - a. Your research potential? ☐
 - b. Your clinical ability and insight? ☐
 - c. Your prestige in the medical profession? ☐
4. Other? ☐

(Please specify)

G. If you prefer not to teach, is this because of:

1. Encroachment by teaching responsibilities on your time? ☐
2. A dislike for teaching? ☐
3. A conviction that teaching contributes nothing to your primary career objectives? ☐
4. Other? ☐

(Please specify)

III. YOUR PLANS FOR FURTHER TRAINING

A. Do you intend to seek specialty board certification? Yes ☐ No ☐

From which Board? _____

B. Would you be better prepared to pursue your preferred career if you also had all of the experience and training represented by the Ph.D. degree in a preclinical science? Yes ☐ No ☐

1. Would such additional qualifications improve:

- a. Your economic potential? ☐
- b. Your research potential? ☐
- c. Your ability to teach? ☐
- d. Your clinical acumen? ☐

2. Should it become possible without financial burden for you to meet in full the requirements for the Ph.D. degree in a preclinical science, would you take advantage of the opportunity? Yes ☐ No ☐

If you would not:

- a. Is the length of time involved a deciding factor? ☐
- b. Do you regard the training and experience as unnecessary? ☐
- c. As an alternative, would you like the opportunity for further study in selected subjects? ☐

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Which subjects? _____

C. Regardless of your plans for your future career, would you like more training and experience in research than you have had? Yes ☐ No ☐

1. If so, which of the following plans for obtaining it would best meet your requirements?

a. Inclusion of research in your residency by:

- (1) Official participation, while a resident, as a part-time associate on a research project ☐
- (2) Periodic freedom from responsibilities as a resident for short-term but full-time concentration on research ☐
- (3) Other ☐

(Please specify)

- b. A formally-awarded "clinical traineeship" which integrates sub-specialty training and research but relieves you of the routine responsibilities of a residency ☐
- c. A formally-awarded full-time research fellowship ☐
(1) For how many years would you want this support?
2. How do the following features of existing "clinical traineeships" affect their suitability for you?
- | | Favorably | Unfavorably |
|---|--------------------------|--------------------------|
| a. Their concentration in specialized areas, pointed toward specific diseases or disease categories | <input type="checkbox"/> | <input type="checkbox"/> |
| b. The level of stipends | <input type="checkbox"/> | <input type="checkbox"/> |
| c. The opportunity for concentrated research experience in a clinical science | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Other <input type="checkbox"/> | | |
- (Please specify)
3. How do the following features of existing research fellowships affect their suitability for you?
- | | Favorably | Unfavorably |
|--|--------------------------|--------------------------|
| a. The concentration of many research fellowship programs in specialized areas, pointed toward specific diseases or disease categories | <input type="checkbox"/> | <input type="checkbox"/> |
| b. The level of stipends | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Fellowship regulations which exclude opportunity to maintain clinical proficiency in order to assure opportunity to concentrate on research | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Regulations in many fellowship programs which exclude teaching opportunities, in order to assure opportunity to concentrate on research | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Time involved in completing an adequate research fellowship appointment | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Other <input type="checkbox"/> | | |
- (Please specify)
- D. Would you like to see one or two years of clinical traineeship or research fellowship, or both, included in the training approved for board certification if it did not lengthen that period? Yes ☐ No ☐
- E. Would you like to obtain additional experience in teaching in preparation for your future career? Yes ☐ No ☐
If so, what means of obtaining such experience would be best suited to your needs?
1. A fellowship which would provide for planned and guided teaching experience as well as clinical or research experience ☐
 2. "On-the-job training," as in the usual junior academic position ☐
 3. Other ☐
- (Please specify)
- F. Have the research activities of staff and faculty members:
1. Been directly beneficial to you as a resident? Yes ☐ No ☐
How?
 2. Made your staff and faculty more available to you for clinical teaching and consultation? Yes ☐ No ☐
 3. Influenced your residency training in other ways? Yes ☐ No ☐
How?
- G. Has the presence of "clinical trainees" or research fellows in your hospital or department affected the character of your internship or residency in any ways that you consider important? Yes ☐ No ☐ Beneficially? ☐ Detrimentally? ☐
Please check any of the following that indicate these effects:
- | | | |
|---|------------------|--------------------------|
| 1. Reduced the clinical teaching material available to you <input type="checkbox"/> | Improved its use | <input type="checkbox"/> |
| 2. Reduced responsibilities which you would prefer to have assumed <input type="checkbox"/> | Increased them | <input type="checkbox"/> |
- (Please specify)
3. Decreased sub-specialty training opportunities for you ☐
Improved them ☐
 4. Other ☐
- (Please specify)
- H. In your opinion, is sufficient detailed information about research fellowships, clinical traineeships, and other career-training opportunities reaching interns and residents? Yes ☐ No ☐
The Medical Fellowship Board will welcome and regard as significant your additional comments and suggestions (Please use additional sheets if necessary):

EXHIBIT 5

TELEPHONE: EXECUTIVE 3-8100

CABLE ADDRESS: NARECO
WASHINGTON, D. C.NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

2101 CONSTITUTION AVENUE, WASHINGTON 25, D. C.

DIVISION OF MEDICAL SCIENCES

The National Academy of Sciences-National Research Council, through its Medical Fellowship Board, has undertaken a study of the support of personnel in the medical sciences, on a national scale. The study is intended to make possible a critical appraisal of present conditions and provide a sound basis for future planning. The study is limited to scientists holding a Doctor's Degree.

A great number of fellowships, scholarships and similar awards is now available at all levels of training and experience, from junior postdoctoral fellowships to long term awards for senior scientists. Their influence on medical schools and on the future of the individuals supported has not been determined. The balance or imbalance between teaching and research, the overemphasis or neglect of one or another scientific discipline, as well as the breadth of research within the disciplines, is known only by guess. The impact of the programs upon faculty size and character, budget and curriculum, and the situations to which they will lead in the future are similarly uncertain.

The Academy-Research Council has had a primary interest in postdoctoral fellowships for many years. This study will determine the direction and emphasis of our future interest and will be available to other agencies for the same purpose.

An analysis of all applications to national agencies for postdoctoral fellowships, scholarships, and similar awards, junior, senior and advanced, is nearing completion. We are turning to you for help with another part of the study. The enclosed tables will provide information of fundamental importance, as will the questionnaire. We will be very grateful if you can complete them and return them to us. All of the data will be held in the strictest confidence and available to no one in a way that will identify your institution, department, or the individuals concerned.

A little later we will want to present some results of the study to you for your opinion and interpretation. Meanwhile, time is of the essence and we will appreciate receiving the enclosures at your earliest convenience. Our request is undoubtedly an imposition on you and your staff. However, we hope that the accuracy and objectivity of the study will justify your effort to help.

Very sincerely yours,

Arthur S. Cain, Jr., M.D.
Director of the Survey

EXHIBIT 5-a

NAS-NRC Division of Medical Sciences
Medical Fellowship Board

QUESTIONNAIRE
(Clinical
Departments)

- I. a) Are you satisfied with the balance between teaching and research in your department as a whole?
- b) If not, how is it out of balance? (Please explain)
- c) To what do you attribute the imbalance?
- II. a) Do you have regularly budgeted positions on your staff for the present academic year which you did not fill? How many?
- b) Would you have liked to fill these positions this year?
- c) If so, was there a reasonable number of candidates?
- d) Were the candidates well qualified?
- e) If there were acceptable candidates, was salary an obstacle to employing them?
- f) What reasons other than salary influenced suitable candidates who did not accept an appointment?
 - 1) Was competition with industry a factor?
 - 2) Was competition with Government a factor?
 - 3) Has the practice of medicine attracted qualified young M.D.'s away from your department?
 - 4) Have opportunities for research or teaching attracted well qualified persons from your clinical department to positions in the basic science departments—people who might otherwise have been expected to remain in your department?
 - 5) Please add any other factors you consider significant.
- g) Did your 1955-56 fellows have difficulty in finding academic posts?
- III. a) Has your department responsibilities in the supervision or direction of metabolic, respiratory, electrocardiographic, or clinical-chemical laboratory, etc.?
- If not, is such responsibility given the basic science departments?
- b) Would a full-time member of a basic science department, with the M.D. and Ph.D. degrees, and certified by the appropriate American Board, be acceptable for part-time clinical duties in your department (somewhat the reverse of the usual clinical-basic science relationship)? Would you welcome such an arrangement?
- If not, what are your principal objections?

(Please use other side of page for discussion of any of the above questions)

EXHIBIT 5-b

NAS-NRC Division of Medical Sciences
Medical Fellowship BoardQUESTIONNAIRE
(Preclinical
Departments)

- I. a) Are you satisfied with the balance between teaching and research in your department as a whole?
- b) If not, how is it out of balance? (Please explain)
- c) To what do you attribute the imbalance?
- II. a) Do you have regularly budgeted positions on your staff for the present academic year which you did not fill? How many?
- b) Would you have liked to fill these positions this year?
- c) If so, was there a reasonable number of candidates?
- d) Were the candidates well qualified?
- e) If there were acceptable candidates, was salary an obstacle to employing them?
- f) What reasons other than salary influenced suitable candidates who did not accept an appointment?
- 1) Was competition with industry a factor?
 - 2) Was competition with Government a factor?
 - 3) Has the practice of medicine attracted qualified young M.D.'s away from your department?
 - 4) Have opportunities for research or teaching attracted well qualified persons in your scientific discipline to positions in the clinical departments—people who might otherwise have been expected to pursue their careers in your department?
 - 5) Please add any other factors you consider significant.
- g) Did your 1955-56 fellows have difficulty in finding academic posts?
- III. a) Has your department responsibilities in the service functions of the hospital (e.g., supervision or direction of any of the activities of a metabolic, respiratory, electrocardiographic, or clinical-chemical laboratory, etc.)? Specify.
- b) Would such responsibilities, if closely related to the interests and special knowledge of your own field, be desirable? It has been said that such activities bring clinical and basic sciences into closer working relationship, add scope to the research and teaching interests of basic science, and help attract qualified persons to careers in basic disciplines. Do you agree?

(Please use other side of page for discussion of any of the above questions)

EXHIBIT 5-c

TABLE 2-A. 1956-1957 FELLOWS

Please list all full-time postdoctoral research and teaching fellows now serving in your department. Please include junior, senior and advanced fellows whose stipends are derived from formally-awarded fellowships, whether from national or local agencies or from your institution. Also include established investigatorships, faculty level awards, etc. Please do not include department members, whatever their position, whose support comes primarily from research grants-in-aid, residents, or those whose support is primarily for clinical training.

NAME	Please Check DEGREES MD Phd Scd	Fellowship Awarded by (Agency or Institution)	Year Began	Duration Yrs. Mos.	PLANS FOR 1957-1958*	
					Anticipated Location Department Institution	Anticipated Position

*If plans are not complete, please so indicate, and give tentative plans, such as another fellowship, academic appointment, industrial position, or other.

(Please use other side if necessary)

TABLE 2-B. 1949-1950 FELLOWS

Please list all full-time postdoctoral research and teaching fellows who served in your department during these years. Please include junior, senior and advanced fellows whose stipends were derived from formally-awarded fellowships, whether from national or local agencies or from your institution.

1949-1950

NAME	Please Check DEGREES MD Phd Scd	Fellowship Awarded by (Agency or Institution)

1939-1940

NAME	Please Check DEGREES			Fellowship Awarded by (Agency or Institution)
	MD	PhD	ScD	

EXHIBIT 5-c

TABLE 2-C. 1939-1940 FELLOWS

Please list all full-time postdoctoral research and teaching fellows who served in your department during these years. Please include junior, senior and advanced fellows whose stipends were derived from formally-awarded fellowships, whether from national or local agencies or from your institution.

1949-1950

NAME	Please Check DEGREES MD Phd Scd	Fellowship Awarded by (Agency or Institution)

1939-1940

NAME	Please Check DEGREES			Fellowship Awarded by (Agency or Institution)
	MD	PhD	ScD	

EXHIBIT 6

TELEPHONE: EXECUTIVE 3-8100

CABLE ADDRESS: NARECO
WASHINGTON, D. C.

NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

2101 CONSTITUTION AVENUE, WASHINGTON 25, D. C.

DIVISION OF MEDICAL SCIENCES

August 18, 1958

A request for Information from
Medical School Faculty Members

With this request, the Division of Medical Sciences of the National Academy of Sciences-National Research Council will complete its survey of fellowships and other forms of personnel support in the medical sciences and the influence of these programs on the medical schools.

The survey was undertaken to serve as a basis for future planning by the Medical Fellowship Board, and will be available for the same purpose to all other agencies concerned with medical education and research. A more complete description of the aims of the survey can be found in the *Journal of the American Medical Association*, December 14, 1957, page 1963.

The information now requested is needed to complete our documentation of the distribution of academic responsibilities and the sources of financial support of the faculty. Such documentation, especially of the financial problem and work load, will aid materially the efforts to improve these aspects of academic life.

The anonymity of your response will be preserved. No analyses will be made on the basis of schools or individual departments. In one small section at the end, the questionnaire calls for information similar to that included in an earlier request to past research fellows. This is necessary as background for the quite different information we now seek from faculty members. We therefore ask that you complete all of the questions, even if you have already responded as a past fellow.

The Medical Fellowship Board will be grateful indeed for your considered completion and speedy return of this questionnaire. We particularly hope you will make use of the page provided for your comments and suggestions, which will be most welcome.

Very sincerely yours,

Arthur S. Cain, Jr., M.D.
Director of the Survey

CONFIDENTIAL**A Request for Information from
Medical School Faculty Members**

(Will you please use the 1957-1958 academic year as the basis for your answers)
ACADEMIC RESPONSIBILITIES

A. Teaching

1. Is your position one in which teaching responsibilities in the scheduled academic courses offered by your department are:

(a) Required of you ☐ (b) At your own option ☐
 (c) Excluded by agreement or by conditions of your appointment ☐

2. If you do have teaching responsibilities in the scheduled academic courses offered by your department, are you responsible for:

(Please check as many as applicable)

	Formal Lectures	Laboratory Supervision
(a) Medical school courses	<input type="checkbox"/>	<input type="checkbox"/>
(b) Undergraduate college courses	<input type="checkbox"/>	<input type="checkbox"/>
(c) Graduate school courses	<input type="checkbox"/>	<input type="checkbox"/>
(d) Dental school courses	<input type="checkbox"/>	<input type="checkbox"/>
(e) Other	<input type="checkbox"/>	<input type="checkbox"/>

(Please specify)

3. Do you have primary responsibility for the organization and conduct of any of these courses? Yes ☐ No ☐

4. Are there assigned to you for supervision:

(a) Graduate students ☐ How many?

(b) Postdoctoral research fellows ☐ How many?

5. Do you have other teaching responsibilities, informal or unscheduled, which make demands on your time (e.g., seminars, elective courses with medical students, lectures to nurses, technicians, etc.)? Yes ☐ No ☐

B. Research

1. Will you please estimate, as best you can, the time you devote to research each year:

(Please check just one)

Essentially full time <input type="checkbox"/>	Less than half of your time <input type="checkbox"/>
More than half of your time <input type="checkbox"/>	Very little time <input type="checkbox"/>
About half of your time <input type="checkbox"/>	None of your time <input type="checkbox"/>

2. Are you the recipient (i.e., responsible or principal investigator) of any grants-in-aid or contracts for the support of research under your direction?

Yes ☐ No ☐

- (a) Are any scientists holding the doctorate employed as research assistants or associates under these grants? Yes ☐ No ☐

How many are so engaged in your research?

(Please include only personnel paid directly from research grant funds. If the exact number is not easily ascertained, your best estimate will suffice.)

- (b) Do any of these assistants or associates devote essentially their full time to research? Yes ☐ No ☐ How many of them do so?

- (c) Do any of them have appreciable departmental responsibilities (teaching, planning or administration) other than their research? Yes ☐ No ☐

How many of them have such responsibilities?

- (d) Do administrative details in connection with these grants make appreciable demands on your own time (e.g., preparation of applications, annual reports, supervision of technicians and assistants)? Yes ☐ No ☐

C. Administration

1. Do you serve on any of the following standing committees of the university or medical school?

(Please check as many as applicable)

Admissions <input type="checkbox"/>	Student affairs <input type="checkbox"/>
Curriculum <input type="checkbox"/>	Other <input type="checkbox"/>
Faculty and student promotions <input type="checkbox"/>	(Please specify) <input type="checkbox"/>
Finance <input type="checkbox"/> <input type="checkbox"/>
Research administration and policies <input type="checkbox"/> <input type="checkbox"/>

2. Do you serve as:

Associate Dean <input type="checkbox"/>	Assistant Dean <input type="checkbox"/>
Research Director or Coordinator <input type="checkbox"/>	

3. Please indicate any other administrative functions which make demands on your time:

- D. Are you satisfied with the distribution of your time between teaching, research, clinical service, and administrative responsibilities in your present position?

Yes ☐ No ☐

If not, in what way would you prefer to change this distribution:

	Increase	Decrease	Eliminate
Teaching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clinical Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Do you have academic tenure? Yes ☐ No ☐

If not, would a position with academic tenure appeal to you, even though it required that you devote a greater part of your time to departmental teaching and administrative responsibilities? Yes ☐ No ☐

F. Considering the demands of teaching and administration, and the opportunities for research, for each individual on the faculty of your department, do you regard these responsibilities and opportunities as being in satisfactory balance for the department as a whole? Yes ☐ No ☐

PRESENT POSITION

A. Faculty rank or title:

Chairman of Department	<input type="checkbox"/>	Instructor	<input type="checkbox"/>
Professor	<input type="checkbox"/>	Associate	<input type="checkbox"/>
Associate Professor	<input type="checkbox"/>	Assistant	<input type="checkbox"/>
Assistant Professor	<input type="checkbox"/>	Other	<input type="checkbox"/>

(Please specify)

1. Department

(a) How long have you been in your present institution? years

(b) In your present department? years

2. Is your present medical school position: (Please check just one)

(a) A full-time salaried appointment ☐

(b) "Geographical" full-time:

(1) With part salary from the medical school ☐

(2) With no salary from the medical school ☐

(c) Part-time:

(1) With part salary from the medical school ☐

(2) With no salary from the medical school ☐

3. From what source is your medical school salary derived? (Please check as many as applicable)

(a) The regular medical school budget (endowments, legislative appropriations, and similar "hard money" sources) ☐

(b) Research grants-in-aid or research contracts (or other "soft money" sources) ☐

(c) A fellowship or similar award from extra-university sources providing direct support for a specific period of time (research fellowships, "scholar grants," "faculty level awards," "established investigatorships," etc.) ☐

(d) A residency, clinical traineeship, or other appointment for clinical training ☐

(e) Other ☐

(Please specify)

If you checked more than one of the above sources, which is the primary source?

(a) ☐ (b) ☐ (c) ☐ (d) ☐ (e) ☐

4. Do you engage in the private practice of medicine to supplement your salary?

Yes ☐ No ☐

Does this provide a major portion of your income? Yes ☐ No ☐

SCIENTIFIC BACKGROUND

A. Please check the degrees you hold:

	Year Granted	Field		Year Granted	Field
M.S.	<input type="checkbox"/>	Sc.D.	<input type="checkbox"/>
Ph.D.	<input type="checkbox"/>	M.D.	<input type="checkbox"/>

B. Have you held a postdoctoral research fellowship? Yes ☐ No ☐

For how many years?

C. If you hold the M.D. degree:

1. Have you served an internship? Yes ☐ No ☐

2. Have you served a residency? Yes ☐ No ☐

For how many years? Field of specialization?

3. Are you a Diplomate of an American specialty board? Yes ☐ No ☐

The Medical Fellowship Board will welcome and regard as significant your additional comments and suggestions. The next page of the questionnaire is reserved for this purpose.

A STUDY OF FELLOWSHIP APPLICANTS, 1956-1957

TABLE 1

THE SUPPLY OF AND DEMAND FOR POSTDOCTORAL FELLOWSHIPS AT THE JUNIOR AND SENIOR LEVELS FOR 1956-1957

FATE OF APPLICATION	LEVEL OF APPLICATION					
	Junior		Senior		All Applicants	
	N	%	N	%	N	%
Fellowship awarded and accepted	701	64.0	161	61.7	862	66.0†
One or more awards offered, but declined by applicants	71	6.5	11	4.2	80*	6.1
No award offered by any agency	323	29.5	89	34.1	365*	27.9
Total applicants	1095	100.0	261	100.0	1307*	100.0

* 49 candidates applied in both junior and senior categories, but are counted only once in the totals.

† The slightly higher acceptance rate for the group as a whole, compared with the junior and senior categories individually, is explained by the overlap between junior and senior applicants. Forty-nine persons applied at both levels; some were accepted at one level and rejected at the other, but were classified as accepted in the "total" column.

TABLE 2

NEW AND RENEWAL APPLICANTS AND FELLOWS, 1956-1957, BY DEGREE

NEW OR RENEWAL	Junior Fellowships			Senior Fellowships		
	Applied N	Accepted Fellowships N	%	Applied N	Accepted Fellowships N	%
<i>M.D.*</i>						
New	445	259	58.2	119	66	55.5
Renewal	154	135	87.7	20	13	65.0
	599	394	65.8	139	79	56.8
Correction	13†	....	....	1†	....	....
Total	586	394	67.2	138	79	57.2
<i>Other doctorates*</i>						
New	379	190	50.1	114	76	66.7
Renewal	141	117	83.0	9	6	66.7
	520	307	59.0	123	82	66.7
Correction	11†	....	....	....	....	....
Total	509	307	60.3	123	82	66.7
<i>All degrees</i>						
New	824	449	54.5	233	142	60.9
Renewal	295	252	85.4	29	19	65.5
	1119	701	62.6	262	161	61.5
Correction	24†	....	....	1†	....	....
Total	1095‡	701	64.0	261‡	161	61.7

* There is no duplication between these two degree categories. The M.D. category includes all who held the M.D. degree alone, plus those who held the M.D. in combination with another doctorate. The "other doctorates" category includes those who held the Ph.D. only, the Sc.D. only, or the Ph.D. in combination with the Sc.D. Unless otherwise indicated, this grouping will be used in all tables in Section II involving a breakdown by degree. These combinations, and the overlap between junior and senior applicants, account for the apparent discrepancies between Table 2 and Table 4 with respect to the number of M.D.'s and Ph.D.'s in the total sample.

† Applied both for new and renewal awards.

‡ These totals include 49 persons who applied both for junior and senior fellowships. They will be counted twice in all tables involving breakdown by level.

TABLE 3
JUNIOR AND SENIOR FELLOWSHIP APPOINTMENTS FOR 1956-1957, BY TYPE
OF SUPPORTING AGENCY

TYPE OF SUPPORTING AGENCY	LEVEL OF FELLOWSHIP					
	Junior		Senior		Total	
	N	%	N	%	N	%
Private philanthropic foundations (including industry)	64	9.1	61	37.9	125	14.5
Governmental agencies	431	61.5	67	41.6	498	57.8
Voluntary health agencies	206	29.4	33	20.5	239	27.7
Total	701	100.0	161	100.0	862	100.0

TABLE 4
DISTRIBUTION OF 1956-1957 APPLICANTS BY TYPE OF INSTITUTION FROM WHICH
DEGREE WAS RECEIVED AND IN WHICH FELLOWSHIP WAS TO BE SERVED

INSTITUTIONAL TYPE	INSTITUTION GRANTING DEGREE						INSTITUTION CHOSEN FOR FELLOWSHIP	
	Baccalaureate*		M.D.		Ph.D. or Sc.D.			
	N	%	N	%	N	%	N	%
University with affiliated medical school	661	50.6	606	86.5	524	80.9	860	65.8
University with 2-year medical school	24	1.8	----	----	----	----	4	0.3
University or college with- out medical school	489†	37.4	----	----	86	13.3	77	5.9
Medical school not affil- iated with a university	3	0.2	24	3.4	3	0.4	29	2.2
Hospital (non-university)	----	----	----	----	----	----	58	4.4
Research institution (non-university)	----	----	----	----	----	----	48	3.7
Non-accredited school	----	----	1	0.1	----	----	----	----
Foreign institution	91	7.0	70	10.0	35	5.4	218	16.7
Unknown	39	3.0	----	----	----	----	13	1.0
Total	1307	100.0	701‡	100.0	648‡	100.0	1307	100.0

* Or location of prebaccalaureate work; 1142 out of 1307 applicants held the baccalaureate degree; the remaining 165 were analyzed according to the institution in which they received the major portion of their undergraduate education.

† 314 of these received the baccalaureate from non-Ph.D. granting institutions; 90 of the 314 attended colleges that granted no degrees higher than the baccalaureate.

‡ The 42 persons who held both the M.D. and the Ph.D. or Sc.D. degrees are included in both columns.

TABLE 5
DISTRIBUTION OF APPLICANTS AND FELLOWS, 1956-1957, BY STATUS AT APPLICATION
AND PER CENT ACCEPTED BY STATUS CATEGORY

STATUS AT APPLICATION	Applicants		Fellows		% of appli- cations accepted
	N	%	N	%	
Unemployed or position unknown	5	0.4	4	0.5	80.0
Completing work for degree	362	27.7	238	27.6	65.7
Intern	39	3.0	31	3.6	79.5
Residency	332	25.4	229	26.6	69.0
Instructor, Lecturer, Assistant	73	5.6	37	4.3	50.7
Assistant Professor or above	111	8.5	72	8.3	64.9
Research position	105	8.0	65	7.5	61.9
Postdoctoral fellowship	174	13.3	116	13.5	66.7
Practice or other clinical position	31	2.4	16	1.8	51.6
Combinations of academic, clinical, and research positions	75	5.7	54	6.3	72.0
Total	1307	100.0	862	100.0	66.0

TABLE 6
DISTRIBUTION OF MEN AND WOMEN AMONG APPLICANTS AND FELLOWS,
1956-1957, BY DEGREE

SEX	Junior Fellowships			Senior Fellowships		
	Applied N	Accepted N	Fellowships %	Applied N	Accepted N	Fellowships %
<i>M.D.</i>						
Male	534	364	68.1	133	78	58.6
Female	52	30	57.7	5	1	20.0
Total	586	394	67.2	138	79	57.2
<i>Other doctorates</i>						
Male	433	259	59.8	116	77	66.4
Female	76	48	63.2	7	5	71.4
Total	509	307	60.3	123	82	66.7
<i>All degrees</i>						
Male	967	623	64.4	249	155	62.2
Female	128*	78	60.9	12*	6	50.0
Total	1095	701	64.0	261	161	61.7

* There were 137 women in the sample, but 3 women applied both for junior and senior fellowships.

TABLE 7
AGES OF APPLICANTS AND FELLOWS, 1956-1957, BY DEGREE

AGE	Junior Fellowships			Senior Fellowships		
	Applied N	Accepted N	Fellowships %	Applied N	Accepted N	Fellowships %
<i>M.D.</i>						
Under 25	2	2	100.0	----	----	----
25-29	192	137	71.4	8	4	50.0
30-34	318	213	67.0	81	44	54.3
35-39	58	37	63.8	36	19	52.8
40 or over	14	3	21.4	13	12	92.3
Unknown	2	2	100.0	----	----	----
Total	586	394	67.2	138	79	57.2
<i>Other doctorates</i>						
Under 25	10	6	60.0	----	----	----
25-29	244	162	66.4	16	7	43.8
30-34	185	113	61.1	36	20	55.6
35-39	49	21	42.9	40	29	72.5
40 or over	21	5	23.8	30	25	83.3
Unknown	----	----	----	1	1	100.0
Total	509	307	60.3	123	82	66.7
<i>All degrees</i>						
Under 25	12	8	66.7	----	----	----
25-29	436	299	68.6	24	11	45.8
30-34	503	326	64.8	117	64	54.7
35-39	107	58	54.2	76	48	63.2
40 or over	35	8	22.9	43	37	86.0
Unknown	2	2	100.0	1	1	100.0
Total	1095	701	64.0	261	161	61.7

TABLE 8
NUMBER OF YEARS SINCE APPLICANTS AND FELLOWS, 1956-1957,
RECEIVED FIRST DOCTORATE, BY DEGREE

YEARS SINCE FIRST DOCTORATE	Junior Fellowships			Senior Fellowships		
	Applied N	Accepted N	Fellowships %	Applied N	Accepted N	Fellowships %
<i>M.D.</i>						
Degree expected	6	4	66.7	----	----	----
1 year	40	33	82.5	1	1	100.0
2 years	53	34	64.2	----	----	----
3 years	116	81	69.8	3	1	33.3
4 years	99	69	69.7	7	4	57.1
5 years	81	60	74.1	18	6	33.3
6 years	50	32	64.0	16	10	62.5
7 years	42	30	71.4	12	7	58.3
8 years	41	26	63.4	21	10	47.6
9 years or more	56	25	44.6	60	40	66.6
Date of degree unknown	2	----	----	----	----	----
Total	586	394	67.2	138	79	57.2
<i>Other doctorates</i>						
Degree expected	206	120	58.3	----	----	----
1 year	124	78	62.9	2	1	50.0
2 years	89	69	77.5	19	10	52.6
3 years	28	14	50.0	12	4	33.3
4 years	17	9	52.9	13	10	76.9
5 years	10	6	60.0	10	5	50.0
6 years	11	5	45.5	11	9	81.8
7 years	7	2	28.6	7	6	85.7
8 years	4	2	50.0	7	3	42.9
9 years or more	13	2	15.4	41	33	80.5
Date of degree unknown	----	----	----	1	1	100.0
Total	509	307	60.3	123	82	66.7
<i>All degrees</i>						
Degree expected	212	124	58.5	----	----	----
1 year	164	111	67.7	3	2	66.7
2 years	142	103	72.5	19	10	52.6
3 years	144	95	66.0	15	5	33.3
4 years	116	78	67.2	20	14	70.0
5 years	91	66	72.5	28	11	39.3
6 years	61	37	60.7	27	19	70.4
7 years	49	32	65.3	19	13	68.4
8 years	45	28	62.2	28	13	46.4
9 years or more	69	27	39.1	101	73	72.3
Date of degree unknown	2	----	----	1	1	100.0
Total	1095	701	64.0	261	161	61.7

TABLE 9
DURATION OF PREVIOUS FELLOWSHIP SUPPORT OF APPLICANTS AND FELLOWS,
1956-1957, BY DEGREE

YEARS OF PREVIOUS FELLOWSHIP	Junior Fellowships			Senior Fellowships		
	Applied N	Accepted N	Fellowships %	Applied N	Accepted N	Fellowships %
<i>M.D.</i>						
< 1 year	8	4	50.0	2	2	100.0
1 year < 2	97	61	62.9	34	16	47.1
2 years < 3	42	30	71.4	24	17	70.8
3 years or more	28	16	57.1	34	20	58.8
Duration unknown	3	1	33.3	3	----	----
No past fellowship	408	282	69.1	41	24	58.5
Total	586	394	67.2	138	79	57.2
<i>Other doctorates</i>						
< 1 year	3	----	----	6	6	100.0
1 year < 2	43	27	62.8	20	15	75.0
2 years < 3	14	6	42.9	12	10	83.3
3 years or more	4	1	25.0	10	6	60.0
Duration unknown	2	2	100.0	----	----	----
No past fellowship	443	271	61.2	75	45	60.0
Total	509	307	60.3	123	82	66.7
<i>All degrees</i>						
< 1 year	11	4	36.4	8	8	100.0
1 year < 2	140	88	62.9	54	31	57.4
2 years < 3	56	36	64.3	36	27	75.0
3 years or more	32	17	53.1	44	26	59.1
Duration unknown	5	3	60.0	3	----	----
No past fellowship	851	553	65.0	116	69	59.5
Total	1095	701	64.0	261	161	61.7

TABLE 10
 ULTIMATE FIELDS OF INTEREST OF APPLICANTS AND FELLOWS, 1956-1957, BY LEVEL
 OF FELLOWSHIP, AND PER CENT ACCEPTED BY FIELD CATEGORY

ULTIMATE FIELD OF INTEREST	Accepted Fellowships								
	Applied		Junior		Senior		Total fellows		
	N	%	N	%	N	%	N	% of all fellows	% of ap- plicants
<i>Clinical</i>									
Medicine and specialties	292	22.4	185	26.4	25	15.5	210	24.4	71.9
Neurology and Psychiatry	35	2.7	14	2.0	3	1.9	17	2.0	48.6
Obstetrics and Gynecology	5	0.4	2	0.3	1	0.6	3	0.4	60.0
Ophthalmology	3	0.2	1	0.1	....	....	1	0.1	33.3
Pathology	58	4.4	26	3.7	7	4.4	33	3.8	56.9
Pediatrics	42	3.2	19	2.7	5	3.1	24	2.8	57.1
Physical Medicine and Public Health	3	0.2	1	0.2	2	1.2	3	0.3	100.0
Radiology	13	1.0	2	0.3	1	0.6	3	0.3	23.1
Surgery and specialties	71	5.4	31	4.4	7	4.4	38	4.4	53.5
Total	522	39.9	281	40.1	51	31.7	332	38.5	63.6
<i>Preclinical</i>									
Anatomy	25	1.9	14	2.0	4	2.5	18	2.1	72.0
Biochemistry and Chemistry	292	22.4	161	23.0	34	21.1	195	22.6	66.8
Biology	94	7.2	47	6.7	13	8.1	60	7.0	63.8
Biophysics	36	2.8	21	3.0	4	2.5	25	2.9	69.5
Epidemiology and Mathematics	4	0.3	3	0.4	1	0.6	4	0.5	100.0
Microbiology	93	7.1	41	5.8	15	9.3	56	6.5	60.2
Pharmacology	33	2.5	14	2.0	5	3.1	19	2.2	57.6
Physiology	147	11.2	79	11.3	29	18.0	108	12.5	73.4
Psychology	42	3.2	28	4.0	2	1.3	30	3.5	71.4
Total	766	58.6	408	58.2	107	66.5	515	59.8	67.2
Nonmedical scientific	15	1.2	10	1.4	2	1.2	12	1.4	80.0
No information	4	0.3	2	0.3	1	0.6	3	0.3	75.0
Grand Total	1307	100.0	701	100.0	161	100.0	862	100.0	66.0

TABLE 11
ULTIMATE FIELDS OF INTEREST OF APPLICANTS, 1956-1957, BY DEGREE

ULTIMATE FIELD OF INTEREST	M.D.		DEGREE Other doctorates		Total	
	N	%	N	%	N	%
<i>Clinical</i>						
Medicine and specialties	288	41.1	4	0.6	292	22.4
Neurology and Psychiatry	33	4.7	2	0.3	35	2.7
Obstetrics and Gynecology	5	0.7	....	....	5	0.4
Ophthalmology	2	0.3	1	0.2	3	0.2
Pathology	49	7.0	9	1.5	58	4.4
Pediatrics	42	6.0	....	....	42	3.2
Physical Medicine and Public Health	2	0.3	1	0.2	3	0.2
Radiology	13	1.8	....	....	13	1.0
Surgery and specialties	71	10.1	....	....	71	5.4
Total	505	72.0	17	2.8	522	39.9
<i>Preclinical</i>						
Anatomy	3	0.4	22	3.6	25	1.9
Biochemistry and Chemistry	58	8.3	234	38.6	292	22.4
Biology	5	0.7	89	14.7	94	7.2
Biophysics	8	1.1	28	4.6	36	2.8
Epidemiology and Mathematics	3	0.4	1	0.2	4	0.3
Microbiology	27	3.9	66	10.9	93	7.1
Pharmacology	10	1.4	23	3.8	33	2.5
Physiology	78	11.2	69	11.4	147	11.2
Psychology	2	0.3	40	6.6	42	3.2
Total	194	27.7	572	94.4	766	58.6
Nonmedical scientific	....	....	15	2.5	15	1.2
No information	2	0.3	2	0.3	4	0.3
Grand Total	701	100.0	606	100.0	1307	100.0

TABLE 12
SUMMARY OF FIELDS OF CONCENTRATION OF 1956-1957 APPLICANTS AT
SUCCESSIVE STAGES IN THEIR CAREERS

FIELD OR DEPARTMENT	Ph.D.'s ONLY		ALL APPLICANTS					
	Field of doctoral training		Pre-fellowship department		Proposed fellowship department		Field of ultimate career	
	N	%	N	%	N	%	N	%
<i>Clinical</i>								
Medicine and specialties	4	0.6	286	21.9	338	25.9	292	22.4
Neurology and Psychiatry	.....	.....	30	2.3	39	3.0	35	2.7
Pathology	6	0.9	50	3.8	67	5.1	58	4.4
Pediatrics	.....	.....	54	4.1	54	4.1	42	3.2
Surgery and specialties	2	0.3	72	5.5	78	6.0	71	5.4
Other	.....	.....	28	2.2	29	2.2	24	1.8
Intern or medical student	.....	.....	62	4.7	.....	.....	.....	.....
Total	12	1.8	582	44.5	605	46.3	522	39.9
<i>Preclinical</i>								
Anatomy	18	2.7	30	2.3	31	2.4	25	1.9
Biochemistry and Chemistry	228	35.2	188	14.4	236	18.1	292	22.3
Biology	117	18.1	102	7.8	115	8.8	94	7.2
Biophysics	36	5.6	35	2.7	33	2.5	36	2.8
Epidemiology and Mathematics	2	0.3	7	0.5	11	0.8	4	0.3
Microbiology	68	10.5	60	4.6	51	3.9	93	7.1
Pharmacology	20	3.1	24	1.8	34	2.6	33	2.5
Physiology	58	8.9	59	4.5	94	7.2	147	11.3
Psychology	44	6.8	38	2.9	27	2.1	42	3.2
Medical sciences	2	0.3	2	0.2	.....	.....	.....	.....
Total	593	91.5	545	41.7	632	48.4	766	58.6
Nonmedical scientific	24	3.7	19	1.5	22	1.7	15	1.2
Nonscientific	5	0.8	3	0.2	.....	.....	.....	.....
No information	14	2.2	158*	12.1	48	3.6	4	0.3
Grand Total	648	100.0	1307	100.0	1307	100.0	1307	100.0

* In some cases, the departments were unknown, in others the prefellowship position could not be classified according to departments (i.e., general practice, internships, certain research positions, or fellowships).

TABLE 13
DEPARTMENTS IN WHICH APPLICANTS PROPOSED TO STUDY AS FELLOWS
DURING 1956-1957, BY DEGREE

PROPOSED FELLOWSHIP DEPARTMENT	M.D.		DEGREE Other doctorates		Total	
	N	%	N	%	N	%
<i>Clinical</i>						
Medicine and specialties	320	45.7	18	3.0	338	25.9
Neurology and Psychiatry	29	4.1	10	1.6	39	3.0
Obstetrics and Gynecology	6	0.9	....	....	6	0.5
Ophthalmology	3	0.4	1	0.2	4	0.3
Pathology	46	6.6	21	3.5	67	5.1
Pediatrics	52	7.4	2	0.3	54	4.1
Physical Medicine and Public Health	2	0.3	1	0.2	3	0.2
Radiology	14	2.0	2	0.3	16	1.2
Surgery and specialties	73	10.4	5	0.8	78	6.0
Total	545	77.8	60	9.9	605	46.3
<i>Preclinical</i>						
Anatomy	8	1.2	23	3.8	31	2.4
Biochemistry and Chemistry	33	4.7	203	33.5	236	18.1
Biology	10	1.4	105	17.4	115	8.8
Biophysics	10	1.4	23	3.8	33	2.5
Epidemiology and Mathematics	6	0.8	5	0.8	11	0.8
Microbiology	12	1.7	39	6.4	51	3.9
Pharmacology	11	1.6	23	3.8	34	2.6
Physiology	48	6.9	46	7.6	94	7.2
Psychology	1	0.1	26	4.3	27	2.1
Total	139	19.8	493	81.4	632	48.4
Nonmedical scientific	....	....	22	3.6	22	1.7
No information	17	2.4	31	5.1	48	3.6
Grand Total	701	100.0	606	100.0	1307	100.0

TABLE 15
COMPARISON OF DEPARTMENTS IN WHICH APPLICANTS PROPOSED TO STUDY AS FELLOWS
DURING 1956-1957 WITH THEIR DEPARTMENTS AT TIME OF APPLICATION
DEPARTMENT AT TIME OF APPLICATION

PROPOSED FELLOWSHIP DEPARTMENT	Clinical										Preclinical										Other or not specified	GRAND TOTAL
	Medicine and specialties	Neurology and Psychiatry	Pathology	Pediatrics	Surgery and specialties	Other	Intern or Med- ical Student	Total	Anatomy	Biochemistry and Chemistry	Biology	Biophysics	Epidemiology and Mathematics	Microbiology	Pharmacology	Physiology	Psychology	Medical Sciences	Total			
<i>Clinical</i>																						
Medicine and specialties	236	1	6	5	1	2	12	263	1	10	1	...	3	...	1	16	59	338
Neurology and Psychiatry	4	16	1	2	4	27	1	7	8	4	39
Pathology	3	2	30	9	44	4	6	5	2	...	2	19	4	67
Pediatrics	4	1	1	37	1	44	...	2	2	4	6	54
Surgery and specialties	1	1	1	...	61	...	4	68	1	1	1	1	2	1	7	3	78
Other	2	1	18	3	24	1	1	...	1	1	4	1	29
Total	250	22	39	44	62	20	33	470	6	19	8	2	3	3	2	7	8	58	77	605
<i>Preclinical</i>																						
Anatomy	...	1	1	...	1	...	2	5	15	...	6	1	...	1	1	24	2	31
Biochemistry and Chemistry	9	...	2	3	...	2	10	26	1	133	12	4	...	12	1	11	...	2	176	34	236	
Biology	2	1	1	1	1	1	1	8	5	11	58	2	...	12	...	1	...	...	89	18	115
Biophysics	3	...	1	...	...	...	3	7	...	5	2	17	...	...	...	...	...	...	24	2	33
Epidemiology and Mathematics	...	...	...	1	...	2	...	3	...	1	1	...	3	...	...	...	...	...	5	3	11
Microbiology	1	...	...	2	...	1	2	6	...	2	3	3	...	22	1	1	...	...	32	13	51
Pharmacology	1	1	...	...	...	...	3	5	...	3	...	...	...	17	3	1	...	...	24	5	34
Physiology	14	3	1	2	6	1	6	33	2	6	5	3	...	1	2	34	1	...	54	7	94	
Psychology	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	21	...	21	4	27
Total	30	6	6	9	8	7	29	95	23	161	87	29	3	48	21	51	24	2	449	88	632	
Other or not specified	6	2	5	1	2	1	...	17	1	8	7	4	1	9	1	1	6	...	38	15	70	
Grand Total	286	30	50	54	72	28	62	582	30	188	102	35	7	60	24	59	38	2	545	180	1307	

TABLE 16
COMPARISON OF ULTIMATE FIELDS OF INTEREST OF 1956-1957 APPLICANTS HOLDING THE
PH.D. OR SC.D. DEGREE WITH THEIR FIELDS OF DOCTORATE STUDY

FIELD OF DOCTORATE STUDY

ULTIMATE FIELD OF INTEREST	Preclinical											Total*	
	All clinical fields	Anatomy	Biochemistry and Chemistry	Biology	Biophysics	Epidemiology and Mathematics	Microbiology	Pharmacology	Physiology	Psychology	Medical Sciences		Other or not specified
All clinical fields	9	1	6	3	...	...	5	2	3	2	...	7	38
<i>Preclinical fields</i>													
Anatomy	...	11	...	9	...	...	...	...	...	...	...	...	22
Biochemistry and Chemistry	1	2	209	6	5	1	5	1	7	...	...	...	8
Biology	...	2	2	71	3	...	5	...	3	...	...	...	3
Biophysics	...	...	2	...	24	...	...	1	1	...	...	...	28
Epidemiology and Mathematics	...	...	...	...	...	1	...	...	...	...	...	...	1
Microbiology	1	...	2	9	1	...	51	...	1	...	1	2	68
Pharmacology	...	...	5	2	...	...	...	15	1	2	...	...	25
Physiology	1	1	2	16	3	...	1	1	41	3	1	5	75
Psychology	...	...	...	...	...	...	...	...	...	36	...	4	40
Other or not specified	...	1	...	1	...	...	1	...	1	1	...	12	17
Total	12	18	228	117	36	2	68	20	58	44	2	43	648

* Does not agree with "other doctorates" column, Table 11, because this table includes the 42 persons who held the M.D. in combination with the Ph.D. or Sc.D. degree. In Table 11, this group was included in the M.D. analysis.

TABLE 17
DEPARTMENTS IN WHICH APPLICANTS AND FELLOWS PROPOSED TO STUDY,
1956-1957, AND PER CENT ACCEPTED BY DEPARTMENTAL CATEGORY

PROPOSED FELLOWSHIP DEPARTMENT	Applied N	Accepted Fellowships N	%
<i>Clinical</i>			
Medicine and specialties	338	252	74.6
Neurology and Psychiatry	39	19	48.7
Obstetrics and Gynecology	6	3	50.0
Ophthalmology	4	1	25.0
Pathology	67	42	62.7
Pediatrics	54	31	57.4
Physical Medicine and Public Health	3	3	100.0
Radiology	16	6	37.5
Surgery and specialties	78	45	57.7
Total	605	402	66.4
<i>Preclinical</i>			
Anatomy	31	19	61.3
Biochemistry and Chemistry	236	150	63.6
Biology	115	80	69.6
Biophysics	33	22	66.7
Epidemiology and Mathematics	11	9	81.8
Microbiology	51	29	56.9
Pharmacology	34	23	67.6
Physiology	94	65	69.2
Psychology	27	21	77.8
Total	632	418	66.1
Nonmedical scientific	22	15	68.2
No information	48	27	56.2
Grand Total	1307	862	66.0

TABLE 18
GEOGRAPHIC LOCATIONS IN WHICH APPLICANTS AND FELLOWS PROPOSED TO STUDY,
1956-1957, AND PER CENT ACCEPTED BY LOCATION CATEGORY

PROPOSED GEOGRAPHIC LOCATION	Applied N	Accepted Fellowships N	%
New England	241	184	76.3
North Atlantic	331	218	65.9
Northeast Central	143	91	63.6
Northwest Central	87	66	75.9
Southeast	64	39	60.9
Southeast Central	22	18	81.8
Southwest Central	23	12	52.2
Mountain	15	11	73.3
West Coast	151	98	64.9
Outside United States	218	114	52.3
Institution unknown	12	11	91.7
Total	1307	862	66.0

Key to geographic location categories:

New England—Maine	Massachusetts	Southeast—Virginia	S. C.
New Hampshire	Rhode Island	W. Virginia	Georgia
Vermont	Connecticut	N. Carolina	Florida
North Atlantic—New York	Delaware	Southeast—Kentucky	Alabama
New Jersey	Maryland	Central Tennessee	Miss.
Pennsylvania	D. C.	Southwest—Arkansas	Oklahoma
Northeast—Ohio	Michigan	Central Louisiana	Texas
Central Indiana	Wisconsin	Mountain—Montana	Colorado
Illinois		Idaho	N. Mexico
Northwest—Iowa	S. Dakota	Wyoming	Arizona
Central Missouri	Nebraska	Utah	Nevada
Kansas	N. Dakota	West Coast—Washington	Oregon
Minnesota		California	

TABLE 19
PLANS OF APPLICANTS AND FELLOWS REGARDING FELLOWSHIP
LOCALE, 1956-1957, BY DEGREE

FELLOWSHIP LOCALE	Junior Fellowships			Senior Fellowships		
	Applied N	Accepted Fellowships N	%	Applied N	Accepted Fellowships N	%
<i>M.D.</i>						
New institution, new department	73	45	61.6	19	12	63.2
New institution, department same or unknown	203	134	66.0	21	12	57.1
Same institution, new department	41	29	70.7	9	8	88.9
Same institution, department same or unknown	260	180	69.2	87	45	51.7
Locale unknown	9	6	66.7	2	2	100.0
Total	586	394	67.2	138	79	57.2
<i>Other doctorates</i>						
New institution, new department	159	104	65.4	34	21	61.8
New institution, department same or unknown	207	119	57.5	43	28	65.1
Same institution, new department	39	25	64.1	....	....	....
Same institution, department same or unknown	104	59	56.7	37	24	64.9
Locale unknown	....	....	....	9	9	100.0
Total	509	307	60.3	123	82	66.7
<i>All degrees</i>						
New institution, new department	232	149	64.2	53	33	62.3
New institution, department same or unknown	410	253	61.7	64	40	62.5
Same institution, new department	80	54	67.5	9	8	88.9
Same institution, department same or unknown	364	239	65.7	124	69	55.6
Locale unknown	9	6	66.7	11	11	100.0
Total	1095	701	64.0	261	161	61.7

TABLE 20
ULTIMATE CAREER PLANS OF APPLICANTS AND FELLOWS, 1956-1957, AND
PER CENT ACCEPTED BY CAREER CATEGORY

PLANS FOR FUTURE CAREER	Applied N	Accepted Fellowships N	%
Teaching	17	8	47.1
Research	200	130	65.0
Combination of teaching and research	420	272	64.8
Clinical practice with research or teaching or both	536	372	69.4
Non-academic clinical practice	26	13	50.0
All other	4	4	100.0
No information	104	63	60.6
Total	1307	862	66.0

A STUDY OF FELLOWS, PAST AND ACTIVE

TABLE 21
DISTRIBUTION OF FELLOWSHIP AWARDS BY TYPE OF SUPPORTING
AGENCY, 1939-1940, 1946-1958 *

TYPE OF AGENCY	Past		Active Junior		Active Senior		Total fellows	
	N	%	N	%	N	%	N	%
Private philanthropic foundations (including industry)	695	25.7	82	17.7	186	64.4	963	27.8
Governmental agencies	1523	56.2	228	49.3	70	24.2	1821	52.6
Voluntary health agencies	772	28.5	171	36.9	92	31.8	1035	29.9
Total fellowships awarded	2990		481		348		3819	
Less duplications*	281	10.4	18	3.9	59	20.4	358	10.3
Total fellows	2709	100.0	463	100.0	289	100.0	3461	100.0

* Fellows supported by more than one type of agency or by more than one agency of a given type.

TABLE 22
ESTIMATED NUMBER OF POSTDOCTORAL FELLOWS IN THE MEDICAL SCIENCES
SUPPORTED ANNUALLY BY TWENTY-TWO NATIONAL AGENCIES,
1939-1940, 1946-1958

YEAR	NUMBER OF ACTIVE FELLOWS						Both levels		
	New	Junior Old*	Total	New	Senior Old*	Total	New	Old*	Total
1939-40	36	3	39	5	3	8	41	6	47
1946-47	65	4	69	22	3	25	87	7	94
1947-48	139	28	167	21	16	37	160	44	204
1948-49	234	64	298	46	23	69	280	87	367
1949-50	350	99	449	46	30	76	396	129	525
1950-51	265	171	436	51	45	96	316	216	532
1951-52	272	125	397	49	72	121	321	197	518
1952-53	301	131	432	47	88	135	348	219	567
1953-54	348	167	515	55	104	159	403	271	674
1954-55	404	220	624	90	121	211	494	341	835
1955-56	445	235	680	130	158	288	575	393	968
1956-57	472	250	722	161	213	374	633	463	1096
1957-58†	288	247	535	136	240	376	424	487	911
Estimated fellowship years	3619	1744	5363	859	1116	1975	4478‡	2860	7338

* "Old" includes renewal appointments and continuations of fellowships awarded in previous years for terms of more than one year.

† Data for 1957-58 incomplete (see text, p. 1403).

‡ The number of new awards is larger than the total number of past and active fellows in the sample for two reasons: (1) During the period under study, some fellows had received awards from more than one cooperating agency, or had held more than one kind of fellowship. (2) This table includes all fellows listed by the cooperating agencies, whether or not they responded to the questionnaire. Other tables in this section are based on questionnaire returns, and are limited to the 3461 fellows who responded.

TABLE 23
DURATION OF FELLOWSHIP EXPERIENCE REPORTED BY PAST AND
ACTIVE FELLOWS, 1939-1940, 1946-1958

DURATION OF FELLOWSHIP EXPERIENCE	*	Past		Active Junior		Active Senior	
		Previous support	Present term*	Previous support	Present term	Previous support	Present term
<i>Junior</i>							
< 1 year		53	2	7	1	3	
1 year		1072	47	52	210	50	
2 years		975	27	25	211	66	
3 years		330	10	8	31	26	
4 years		121	....	....	3	12	
5 years		43	1	....	3	4	
6 years		19	....	1	1	1	
7 years		5	....	....	1	1	
8 years or more		2	....	1	....	2	
Duration not specified		20	16	....	....	2	
No experience		69	2606	369	2†	122	
Total fellows		2709	2709	463	463	289	
<i>Senior</i>							
< 1 year		9	....			....	7
1 year		55	3			1	47
2 years		70	1			2	22
3 years		58	20			1	46
4 years		12	3			....	6
5 years		81	67			....	146
6-7 years		6	2			....	2
8 years or more		3	2			....	2
Duration not specified		13	4			....	4
No experience		2402	2607			285	7†
Total fellows		2709	2709			289	289

* If a fellow was known to be in both the past and present categories, effort was made to send him the present fellow questionnaire. A few of these people were sent the past fellow questionnaire by error. The others presumably are reporting on current fellowships under auspices of agencies other than those included in the survey.

† Presumably had resigned from fellowship before questionnaire was sent.

TABLE 24
NUMBER OF SUPPORTING AGENCIES* UNDER WHICH PAST AND ACTIVE FELLOWS
HELD APPOINTMENT AT THE JUNIOR LEVEL, 1939-1940, 1946-1958

NUMBER OF SUPPORTING AGENCIES	Past	Active Junior	Active Senior	Total
No junior fellowships held	69	....	122	191
1 agency	1975	369	108	2452
2 agencies	507	88	47	642
3 agencies	85	3	8	96
4 agencies	12	3	....	15
5 agencies	2	....	....	2
Not specified	59	....	4	63
Total	2709	463	289	3461

* Includes current supporting agencies for active junior fellows.

TABLE 25
INTEREST OF PAST AND ACTIVE FELLOWS IN ADDITIONAL FELLOWSHIP SUPPORT

INTEREST IN ADDITIONAL FELLOWSHIP SUPPORT	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
<i>Would like additional fellowship support*</i>								
Yes	1278	47.2	178	38.4	46	15.9	1502	43.4
No	1252	46.2	199	43.0	180	62.3	1631	47.1
Undecided	....	....	81	17.5	38	13.1	119	3.4
Not specified	179	6.6	5	1.1	25	8.7	209	6.1
Total	2709	100.0	463	100.0	289	100.0	3461	100.0
<i>Duration of support desired</i>								
< 1 year	13	1.0	3	1.7	....	....	16	1.1
1 year	308	24.1	115	64.6	10	21.8	433	28.8
2 years	208	16.3	41	23.0	7	15.2	256	17.0
3 years	101	7.9	4	2.2	3	6.5	108	7.2
4 years	21	1.7	1	0.6	3	6.5	25	1.7
5 years	320	25.0	9	5.1	7	15.2	336	22.4
6 years or more	109	8.5	1	0.6	4	8.7	114	7.6
Not specified	198	15.5	4	2.2	12	26.1	214	14.2
Total desiring fellowship support	1278	100.0	178	100.0	46	100.0	1502	100.0

* Past fellows were asked: "Would you like additional fellowship support at any time in the future?" Active fellows were asked: "Do you want to continue as a fellow at the end of your present appointment?"

TABLE 26
LEVEL OF FUTURE FELLOWSHIP SUPPORT DESIRED
BY PAST FELLOWS, BY DEGREE

LEVEL OF FELLOWSHIP DESIRED	M.D.*		DEGREE Other doctorates*		Total	
	N	%	N	%	N	%
Postdoctoral	102	5.8	129	13.6	231	8.5
Senior (long-term)	380	21.6	302	31.8	682	25.2
Other or combination	207	11.8	200	21.1	407	15.0
None desired	981	55.7	271	28.6	1252	46.2
Not specified	90	5.1	47	4.9	137	5.1
Total	1760	100.0	949	100.0	2709	100.0

* The M.D. category includes all who held the M.D. degree alone, plus those who held the M.D. in combination with another doctorate. The "other doctorates" category includes those who held the Ph.D. only, the Sc.D. only, or the Ph.D. in combination with the Sc.D.

TABLE 27
DISTRIBUTION OF DEGREES HELD BY PAST AND ACTIVE FELLOWS,
BY INITIAL YEAR OF FIRST FELLOWSHIP TERM

INITIAL YEAR OF FIRST FELLOWSHIP TERM	DEGREE							
	M.D.*		Ph.D.*		Both*		Total	
	N	%	N	%	N	%	N	%
<i>Past fellows</i>								
1938-1939	21	52.5	13	32.5	6	15.0	40	100.0
1941-1948	307	69.6	100	22.7	34	7.7	441	100.0
1949-1951	487	63.4	193	25.1	88	11.5	768	100.0
1952-1954	439	51.4	372	43.6	43	5.0	854	100.0
1955-1958	320	53.1	270	44.8	13	2.1	603	100.0
Year not specified	2	----	1	----	----	----	3	----
Total past fellows	1576	58.2	949	35.0	184	6.8	2709	100.0
Active junior fellows	255	55.1	201	43.4	7	1.5	463	100.0
Active senior fellows	170	58.8	94	32.5	25	8.7	289	100.0
Grand Total	2001	57.8	1244	35.9	216	6.3	3461	100.0

* There is no duplication among these three degree categories. The M.D. category includes those who held the M.D. only and those who held the M.D. in combination with the Sc.D. The Ph.D. category includes those who held the Ph.D. only, the Sc.D. only, or the Ph.D. in combination with the Sc.D. The "both" category includes those who held the M.D. in combination with the Ph.D. degree. Unless otherwise indicated, this grouping will be used in all tables in Section III involving a breakdown by degree.

TABLE 28
DISTRIBUTION OF MEN AND WOMEN AMONG PAST AND ACTIVE FELLOWS, BY DEGREE

SEX	DEGREE							
	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Past</i>								
Female	93	46.3	101	50.2	7	3.5	201	100.0
Male	1483	59.1	848	33.8	177	7.1	2508	100.0
Total	1576	58.2	949	35.0	184	6.8	2709	100.0
<i>Active junior</i>								
Female	21	39.6	32	60.4	....	....	53	100.0
Male	234	57.1	169	41.2	7	1.7	410	100.0
Total	255	55.1	201	43.4	7	1.5	463	100.0
<i>Active senior</i>								
Female	2	25.0	6	75.0	....	....	8	100.0
Male	168	59.8	88	31.3	25	8.9	281	100.0
Total	170	58.8	94	32.5	25	8.7	289	100.0
<i>All fellows</i>								
Female	116	44.3	139	53.0	7	2.7	262	100.0
Male	1885	58.9	1105	34.5	209	6.6	3199	100.0
Grand Total	2001	57.8	1244	35.9	216	6.3	3461	100.0

TABLE 29
BACKGROUND OF CLINICAL TRAINING OF PAST AND ACTIVE
FELLOWS HOLDING THE M.D. DEGREE

CLINICAL TRAINING	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
<i>Have you completed an internship?</i>								
Yes	1706	96.9	251	95.8	184	94.4	2141	96.6
No	49	2.8	11	4.2	11	5.6	71	3.2
Not specified	5	0.3	----	----	----	----	5	0.2
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0
<i>Have you served as a resident?</i>								
Yes	1541	87.6	217	82.8	166	85.1	1924	86.8
No	203	11.5	45	17.2	27	13.8	275	12.4
Not specified	16	0.9	----	----	2	1.1	18	0.8
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0
<i>For how many years?</i>								
< 1 year	12	0.7	----	----	1	0.5	13	0.6
1 year	193	11.0	41	15.7	13	6.7	247	11.1
2 years	455	25.8	89	34.0	49	25.1	593	26.8
3 years	444	25.2	53	20.2	44	22.6	541	24.4
4 years	193	11.0	20	7.6	14	7.2	227	10.2
5 years	191	10.9	14	5.3	44	22.6	249	11.2
Not specified	69	3.9	----	----	3	1.5	72	3.3
Not applicable (did not serve residency)	203	11.5	45	17.2	27	13.8	275	12.4
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0
<i>Are you a Diplomate of an American Specialty Board?</i>								
Yes	845	48.0	23	8.8	88	45.1	956	43.1
No, but plan to seek certification	587	33.4	195	74.4	59	30.3	841	38.0
No, do not plan to seek certification	266	15.1	35	13.4	45	23.1	346	15.6
Undecided	62	3.5	9	3.4	3	1.5	74	3.3
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0

TABLE 30
CLINICAL FIELDS IN WHICH PAST AND ACTIVE FELLOWS HOLDING
THE M.D. DEGREE SERVED RESIDENCIES

FIELD OF RESIDENCY	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
Internal Medicine	876	49.8	140	53.4	84	43.1	1100	49.7
Medical specialties	30	1.7	5	1.9	2	1.0	37	1.7
Physical Medicine and Public Health	4	0.2	----	----	1	0.5	5	0.2
Psychiatry and Neurology	83	4.7	4	1.5	12	6.2	99	4.5
Obstetrics and Gynecology	19	1.1	2	0.8	6	3.1	27	1.2
Ophthalmology	10	0.6	----	----	1	0.5	11	0.5
Pathology, Oncology	108	6.1	16	6.1	5	2.6	129	5.8
Pediatrics	130	7.4	25	9.5	21	10.8	176	7.9
Radiology	23	1.3	3	1.1	3	1.5	29	1.3
Surgery (general)	150	8.5	15	5.7	27	13.8	192	8.7
Surgical specialties	85	4.8	7	2.7	4	2.1	96	4.3
Field not specified	39	2.2	----	----	2	1.0	41	1.8
Not applicable (did not serve a residency)	203	11.6	45	17.3	27	13.8	275	12.4
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0

TABLE 31

EVALUATION BY PAST AND ACTIVE FELLOWS HOLDING THE M.D. DEGREE
OF THE EFFECTS OF CLINICAL EXPERIENCE ON THEIR CHOICES OF CAREERS

EFFECTS OF CLINICAL EXPERIENCE ON CAREER CHOICE	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
Created interest in an academic career in a:								
Basic science	243	13.8	46	17.6	31	15.9	320	14.4
Clinical science	933	53.0	138	52.7	94	48.2	1165	52.5
Combination of the two	237	13.5	43	16.4	43	22.1	323	14.6
No influence indicated	347	19.7	35	13.3	27	13.8	409	18.5
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0
Created interest in full-time practice of medicine:								
Yes	282	16.0	34	13.0	†		316	15.6
No	983	55.9	148	56.5			1131	55.9
Not specified	495	28.1	80	30.5			575	28.5
Total holding M.D.	1760	100.0	262	100.0			2022	100.0

† Present senior fellows were not asked this question.

TABLE 32

EVALUATION BY PAST AND ACTIVE FELLOWS HOLDING THE M.D. DEGREE
OF THE EFFECTS OF CLINICAL EXPERIENCE ON THEIR FELLOWSHIP RESEARCH

EFFECTS OF CLINICAL EXPERIENCE ON FELLOWSHIP RESEARCH	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
Influenced direction of fellowship research	1257	71.4	207	79.0	160	82.1	1624	73.3
Was of value in:								
Planning research	1333	75.7	208	79.4	162	83.1	1703	76.8
Conducting research	1213	68.9	170	64.9	151	77.4	1534	69.2
Interpreting results	1272	72.3	198	75.6	153	78.5	1623	73.2
Handicapped him as a research fellow	140	8.0	17	6.5	15	7.7	172	7.8
Total holding M.D.	1760	100.0	262	100.0	195	100.0	2217	100.0

TABLE 33

ACADEMIC POSITIONS HELD BY ACTIVE FELLOWS PRIOR
TO THE FELLOWSHIP EXPERIENCE

PREVIOUS ACADEMIC RANK	Active Junior		Active Senior		Total active fellows	
	N	%	N	%	N	%
Professors*	2	0.4	18	6.2	20	2.6
Associate Professors	4	0.9	52	18.0	56	7.4
Assistant Professors	17	3.7	122	42.2	139	18.5
Instructors, Lecturers, Associates, Assistants	74	16.0	40	13.8	114	15.2
Research Associates or Assistants	6	1.3	2	0.7	8	1.1
Title not specified	1	0.2	2	0.7	3	0.4
Total who had held academic positions	104	22.5	236	81.6	340	45.2
Not applicable (had not held academic positions in the past)	355	76.7	49	17.0	404	53.7
Not specified	4	0.8	4	1.4	8	1.1
Total active fellows	463	100.0	289	100.0	752	100.0

* Includes two former departmental chairmen, one holding a junior fellowship, the other a senior fellowship.

TABLE 34
TEACHING RESPONSIBILITIES CARRIED BY PAST AND ACTIVE FELLOWS
DURING THE TENURE OF THEIR FELLOWSHIPS

TEACHING RESPONSIBILITIES	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
<i>Extent</i>								
None	1085	40.0	219	47.3	50	17.3	1354	39.1
Very little	1216	44.9	202	43.6	88	30.4	1506	43.5
Considerable	392	14.5	42	9.1	147	50.9	581	16.8
Not specified	16	0.6	----	----	4	1.4	20	0.6
Total fellows	2709	100.0	463	100.0	289	100.0	3461	100.0
<i>Nature</i>								
Limited to laboratory assistance	242	14.9	37	15.2	2	0.9	281	13.3
Part of primary lecture schedule	880	54.2	109	44.7	191	79.9	1180	56.0
Other or not specified	502	30.9	98	40.1	46	19.2	646	30.7
Total engaged in teaching	1624	100.0	244	100.0	239	100.0	2107	100.0
<i>Guidance*</i>								
Yes	741	45.6	118	48.3	89	37.2	948	45.0
No	631	38.9	98	40.2	120	50.2	849	40.3
Not specified	252	15.5	28	11.5	30	12.6	310	14.7
Total engaged in teaching	1624	100.0	244	100.0	239	100.0	2107	100.0

* "Was this teaching experience guided, criticized, planned and improved by senior department members?"

TABLE 35
TEACHING RESPONSIBILITIES CARRIED BY PAST FELLOWS DURING THE
TENURE OF THEIR FELLOWSHIPS, BY DEGREE

EXTENT OF TEACHING RESPONSIBILITIES	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
None	343	21.8	676	71.2	66	35.9	1085	40.0
Very little	889	56.4	237	25.0	90	48.9	1216	44.9
Considerable	331	21.0	35	3.7	26	14.1	392	14.5
Not specified	13	0.8	1	0.1	2	1.1	16	0.6
Total past fellows	1576	100.0	949	100.0	184	100.0	2709	100.0

TABLE 36
COURSES IN WHICH FELLOWS WERE ENROLLED DURING THE
TENURE OF THE FELLOWSHIP, BY DEGREE

COURSES TAKEN DURING FELLOWSHIP	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Past fellows</i>								
Biological sciences*	96	23.6	75	42.4	35	42.7	206	31.0
Chemistry, Biochemistry	180	44.3	79	44.6	49	59.8	308	46.3
Mathematics, Physics	186	45.8	38	21.5	36	43.9	260	39.1
Total number reporting enrollment in courses†	406	100.0	177	100.0	82	100.0	665	100.0
(Per cent of total enrolled in courses)		(25.8)		(18.7)		(44.6)		(24.5)
Not specified	31		25		25		81	
Did not enroll in courses	1139		747		77		1963	
Total past fellows	1576		949		184		2709	
<i>Active junior</i>								
Biological sciences*	15	18.3	14	35.0	----	----	29	23.6
Chemistry, Biochemistry	42	51.2	15	37.5	----	----	57	46.3
Mathematics, Physics	37	45.1	8	20.0	1	100.0	46	37.4
Total number reporting enrollment in courses†	82	100.0	40	100.0	1	100.0	123	100.0
(Per cent of total enrolled in courses)		(32.2)		(19.9)		(14.3)		(26.6)
Not specified	5		7		2		14	
Did not enroll in courses	168		154		4		326	
Total junior fellows	255		201		7		463	
<i>Active senior</i>								
Biological sciences*	4	10.5	4	40.0	2	50.0	10	19.2
Chemistry, Biochemistry	14	36.8	4	40.0	1	25.0	19	36.5
Mathematics, Physics	19	50.0	2	20.0	1	25.0	22	42.3
Total number reporting enrollment in courses†	38	100.0	10	100.0	4	100.0	52	100.0
(Per cent of total enrolled in courses)		(22.4)		(10.6)		(16.0)		(18.0)
Not specified	5		6		3		14	
Did not enroll in courses	127		78		18		223	
Total senior fellows	170		94		25		289	
<i>All fellows</i>								
Biological sciences*	115	21.9	93	41.0	37	42.5	245	29.2
Chemistry, Biochemistry	236	44.9	98	43.2	50	57.5	384	45.7
Mathematics, Physics	242	46.0	48	21.1	38	43.7	328	39.0
Total number reporting enrollment in courses†	526	100.0	227	100.0	87	100.0	840	100.0
(Per cent of all fellows enrolled in courses)		(26.3)		(18.2)		(40.3)		(24.3)
Not specified	41		38		30		109	
Did not enroll in courses	1434		979		99		2512	
Grand Total	2001		1244		216		3461	

* Anatomy, Physiology, Microbiology, etc.

† The sum of those studying in the three subject areas analyzed may be smaller or larger than the total number reporting enrollment in courses. This total includes some fellows who took only clinical courses and others who took courses in more than one of the subject areas analyzed.

TABLE 37
TYPES OF POSITIONS HELD BY PAST FELLOWS IN 1958, BY DEGREE

TYPE OF POSITION*	DEGREE							
	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
FT academic medicine	638	40.5	354	37.2	97	52.7	1089	40.2
PT academic medicine	362	23.0	16	1.7	34	18.5	412	15.2
FT academic, nonmedical	25	1.6	252	26.6	4	2.2	281	10.4
PT academic, nonmedical	9	0.6	8	0.8	2	1.1	19	0.7
FT hospital	64	4.1	10	1.1	3	1.6	77	2.8
FT research	15	1.0	56	5.9	1	0.5	72	2.7
Hospital and research	12	0.8	10	1.1	1	0.5	23	0.8
FT practice	190	12.0	....	....	4	2.2	194	7.2
Industry†	7	0.4	52	5.5	2	1.1	61	2.3
Government‡	47	3.0	89	9.4	17	9.3	153	5.6
Other	31	1.9	15	1.6	3	1.6	49	1.8
Not applicable‡	176	11.1	87	9.1	16	8.7	279	10.3
Total	1576	100.0	949	100.0	184	100.0	2709	100.0

* Past fellows were not questioned directly regarding their positions, but were asked to indicate the types of institutions in which they were serving (see exhibit 1, Appendix I). Positions were categorized on the basis of their responses or combinations of responses (see text, page 1409).

† Alone or combined with a position in a hospital and/or research institute.

‡ Still on fellowship (257) or out of professional work (22).

Key: FT = Full-time

PT = Part-time

TABLE 38
ACADEMIC RANKS HELD BY PAST FELLOWS IN 1958, BY DEGREE

ACADEMIC RANK	DEGREE							
	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
Department Chairman	47	3.0	19	2.0	11	6.0	77	2.9
Professor	66	4.2	68	7.2	15	8.2	149	5.5
Associate Professor	177	11.2	113	11.9	33	17.9	323	11.9
Assistant Professor	304	19.3	221	23.3	41	22.3	566	20.9
Instructor, etc.*	274	17.4	102	10.7	15	8.2	391	14.4
Resident or Intern	65	4.1	....	....	3	1.6	68	2.5
Other ranks†	223	14.2	189	19.9	26	14.1	438	16.2
Rank not specified	54	3.4	13	1.4	4	2.2	71	2.6
Not applicable‡	366	23.2	224	23.6	36	19.5	626	23.1
Total	1576	100.0	949	100.0	184	100.0	2709	100.0

* Includes Lecturers, Associates, Assistants and Demonstrators.

† Includes full-time research or administrative positions, held either in an academic or a non-academic institution, and full-time hospital staff positions.

‡ Still a fellow (257), out of professional work (22), in government service (153), or in full-time private practice (194).

TABLE 39
ACADEMIC RANKS HELD BY PAST FELLOWS IN 1958, BY DEGREE AND BY INITIAL
YEAR OF FIRST FELLOWSHIP TERM

ACADEMIC RANK	1938 to		1941 to		1949 to		1951		1952 to		1955 to		Not specified	N	Total
	N	%	N	%	N	%	N	%	N	%	N	%			
<i>M.D.*</i>															
Department Chairman	9	33.3	25	7.3	18	3.1	6	1.2	3	0.9	...	...	...	58	3.3
Professor	5	18.5	40	11.7	26	4.5	7	1.5	5	1.5	...	...	...	81	4.6
Associate Professor	7	26.0	73	21.4	97	16.9	28	5.8	31	9.3	...	...	...	210	11.9
Assistant Professor	...	...	59	17.3	150	26.1	105	21.8	109	22.6	75	22.5	...	345	19.6
Instructor	2	7.4	26	7.6	77	13.4	109	22.6	19	3.9	41	12.3	...	289	16.4
Resident	...	...	...	...	8	1.4	19	3.9	76	15.8	43	12.9	...	68	3.9
Other ranks†	1	3.7	45	13.2	83	14.4	21	4.4	11	3.3	...	...	1	249	14.2
Not specified	...	...	9	2.7	17	3.0	...	...	...	...	...	...	...	58	3.3
Not applicable‡	3	11.1	64	18.8	99	17.2	111	23.0	134	37.3	...	...	...	402	22.8
Total	27	100.0	341	100.0	575	100.0	482	100.0	333	100.0	...	...	2	1760	100.0
<i>Other doctorates*</i>															
Department Chairman	5	38.4	5	5.0	4	2.1	3	0.8	2	0.8	...	...	...	19	2.0
Professor	4	30.8	22	22.0	13	6.7	9	2.4	20	7.4	...	...	...	68	7.2
Associate Professor	...	...	26	26.0	32	16.6	29	7.8	26	9.6	...	...	...	113	11.9
Assistant Professor	...	...	10	10.0	49	25.4	107	28.8	54	20.0	...	...	1	221	23.3
Instructor	...	...	2	2.0	5	2.6	49	13.2	46	17.0	...	...	...	102	10.7
Other ranks†	1	7.7	15	15.0	44	22.8	72	19.3	57	21.1	...	...	...	189	19.9
Not specified	1	7.7	3	3.0	1	0.5	6	1.6	2	0.8	...	...	...	13	1.4
Not applicable‡	2	15.4	17	17.0	45	23.3	97	26.1	63	23.3	...	...	...	224	23.6
Total	13	100.0	100	100.0	193	100.0	372	100.0	270	100.0	...	...	1	949	100.0
<i>All degrees</i>															
Department Chairman	14	35.0	30	6.8	22	2.9	9	1.0	2	0.3	...	...	...	77	2.9
Professor	9	22.5	62	14.1	39	5.1	16	1.9	23	3.8	...	...	...	149	5.5
Associate Professor	7	17.5	99	22.4	129	16.8	57	6.7	31	5.1	...	...	...	323	11.9
Assistant Professor	...	...	69	15.6	199	25.9	212	24.8	85	14.1	...	...	1	566	20.9
Instructor	2	5.0	28	6.4	82	10.7	158	18.5	121	20.1	...	...	...	391	14.4
Resident	...	...	...	...	8	1.0	19	2.2	41	6.8	...	...	...	68	2.5
Other ranks†	2	5.0	60	13.6	127	16.5	148	17.3	100	16.6	...	...	1	438	16.2
Not specified	1	2.5	12	2.7	18	2.3	27	3.2	13	2.2	...	...	...	71	2.6
Not applicable‡	5	12.5	81	18.4	144	18.8	208	24.4	187	31.0	...	...	1	626	23.1
Total	40	100.0	441	100.0	768	100.0	854	100.0	603	100.0	...	...	3	2709	100.0

* The M.D. category includes all who held the M.D. degree alone, plus those who held the M.D. in combination with another doctorate. The "other doctorates" category includes those who held the Ph.D. only, the Sc.D. only, or the Ph.D. in combination with the Sc.D.

† Includes full-time research or administrative positions, held either in an academic or a non-academic institution, and full-time hospital staff positions.

‡ Still a fellow (257), out of professional work (22), in government service (153), or in full-time private practice (194).

§ Data for 1957-1958 incomplete (see text, p. 1403).

TABLE 40
TYPES OF POSITIONS HELD IN 1958 BY PAST FELLOWS, BY
LEVEL OF FELLOWSHIP†

TYPE OF POSITION	LEVEL OF FELLOWSHIP							
	Junior		Senior		Both levels		Total	
	N	%	N	%	N	%	N	%
FT academic medicine	888	38.9	144	51.0	57	39.6	1089	40.2
PT academic medicine	375	16.4	25	8.9	12	8.3	412	15.2
FT academic, nonmedical	225	9.8	49	17.4	7	4.9	281	10.4
PT academic, nonmedical	15	0.7	4	1.4	....	....	19	0.7
FT hospital	70	3.1	5	1.8	2	1.4	77	2.8
FT research	65	2.8	5	1.8	2	1.4	72	2.7
Hospital or research institute	22	1.0	....	....	1	0.7	23	0.8
FT practice	187	8.2	3	1.1	4	2.8	194	7.2
Industry*	55	2.4	6	2.1	....	....	61	2.3
Government*	127	5.6	21	7.4	5	3.4	153	5.6
Other	46	1.9	2	0.7	1	0.7	49	1.8
Not applicable†	208	9.1	18	6.4	53	36.8	279	10.3
Total	2283	100.0	282	100.0	144	100.0	2709	100.0

* Alone or combined with a position in a hospital or a research institute.

† Still on fellowship (257) or out of professional work (22).

‡ The numbers of junior and senior fellowships reported here differ from those shown in Tables 42 and 43. The data on fellowship level in Table 40 were derived from the reports of cooperating agencies, and covered only the programs included in the survey. Corresponding data in Tables 42 and 43 were based on past fellowship experience reported by fellows on their questionnaires, hence were not limited to the programs of the cooperating agencies.

TABLE 41
DEPARTMENTS IN WHICH PAST FELLOWS HELD POSITIONS IN 1958, BY DEGREE

DEPARTMENT	DEGREE											
	N	M.D.	%	N	Ph.D.	%	N	Both	%	N	Total	%
<i>Past fellows in FT academic life</i>												
<i>Clinical</i>												
Medicine and specialties	321		48.4	14		2.3	19		18.8	354		25.8
Obstetrics and Gynecology	8		1.2	2		0.3	2		2.0	12		0.9
Ophthalmology	2		0.3	2		0.3	1		1.0	5		0.4
Pathology	60		9.0	13		2.2	10		9.9	83		6.1
Pediatrics	67		10.1	2		0.3	7		6.9	76		5.5
Physical Medicine and Public Health	7		1.1	2		0.3	3		3.0	12		0.9
Psychiatry and Neurology	21		3.2	7		1.2	3		3.0	31		2.3
Radiology	8		1.2	4		0.7	2		1.9	14		1.0
Surgery and specialties	73		11.0	5		0.8	9		8.9	87		6.3
Total clinical	567		85.5	51		8.4	56		55.4	674		49.2
<i>Preclinical</i>												
Anatomy	11		1.7	45		7.4	8		7.9	64		4.7
Biochemistry and Chemistry	7		1.0	183		30.2	14		13.9	204		14.9
Biology*	2		0.3	108		17.8	....		....	110		8.0
Biophysics	3		0.4	21		3.5	....		....	24		1.8
Epidemiology and Mathematics	3		0.4	....		....	....		....	3		0.2
Microbiology	17		2.6	68		11.2	....		....	85		6.2
Pharmacology	15		2.3	38		6.3	9		8.9	62		4.5
Physiology	25		3.8	48		7.9	9		8.9	82		6.0
Psychology	....		....	11		1.8	....		....	11		0.8
Total preclinical	83		12.5	522		86.1	40		39.6	645		47.1
Nonmedical scientific	....		....	24		4.0	....		....	24		1.7
Nonscientific	1		0.2	2		0.3	1		1.0	4		0.3
Not specified	12		1.8	7		1.2	4		4.0	23		1.7
Total in FT academic life	663		100.0	606		100.0	101		100.0	1370		100.0

* Includes Zoology, Genetics, and Radiation Biology.

TABLE 41 (Continued)
DEPARTMENTS IN WHICH PAST FELLOWS HELD POSITIONS IN 1958, BY DEGREE

DEPARTMENT	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Past fellows not in FT academic life</i>								
<i>Clinical</i>								
Medicine and specialties	272	29.8	8	2.3	14	16.9	294	21.9
Obstetrics and Gynecology	8	0.9	....	....	2	2.4	10	0.7
Ophthalmology	5	0.5	....	....	....	....	5	0.4
Pathology	39	4.3	4	1.2	4	4.8	47	3.5
Pediatrics	22	2.4	1	0.3	2	2.4	25	1.9
Psychiatry and Neurology	35	3.8	2	0.6	4	4.8	41	3.1
Radiology	9	1.0	....	....	2	2.4	11	0.8
Surgery and specialties	91	10.0	1	0.3	4	4.8	96	7.2
Total	481	52.7	16	4.7	32	38.5	529	39.5
<i>Preclinical</i>								
Anatomy	3	0.3	2	0.6	1	1.2	6	0.4
Biochemistry and Chemistry	3	0.3	36	10.5	2	2.4	41	3.1
Biology	....	....	12	3.5	1	1.2	13	1.0
Biophysics	3	0.3	4	1.2	2	2.4	9	0.7
Microbiology	1	0.1	7	2.0	2	2.4	10	0.7
Pharmacology	3	0.4	4	1.2	....	....	7	0.5
Physiology	7	0.8	3	0.8	2	2.4	12	0.9
Psychology	....	....	4	1.2	....	....	4	0.3
Total	20	2.2	72	21.0	10	12.0	102	7.6
Nonmedical scientific	....	....	5	1.4	....	....	5	0.4
Nonscientific	....	....	1	0.3	....	....	1	0.1
Not specified	46	5.0	25	7.3	5	6.1	76	5.7
Not applicable†	366	40.1	224	65.3	36	43.4	626	46.7
Total not in FT academic life	913	100.0	343	100.0	83	100.0	1339	100.0
<i>All past fellows</i>								
<i>Clinical</i>								
Medicine and specialties	593	37.7	22	2.3	33	17.9	648	23.9
Obstetrics and Gynecology	16	1.0	2	0.2	4	2.2	22	0.8
Ophthalmology	7	0.4	2	0.2	1	0.5	10	0.4
Pathology	99	6.3	17	1.8	14	7.6	130	4.8
Pediatrics	89	5.6	3	0.3	9	4.9	101	3.7
Physical Medicine and Public Health	7	0.4	2	0.2	3	1.6	12	0.4
Psychiatry and Neurology	56	3.6	9	1.0	7	3.8	72	2.7
Radiology	17	1.1	4	0.4	4	2.2	25	0.9
Surgery and specialties	164	10.4	6	0.6	13	7.1	183	6.8
Total	1048	66.5	67	7.0	88	47.8	1203	44.4
<i>Preclinical</i>								
Anatomy	14	0.9	47	5.0	9	4.9	70	2.6
Biochemistry and Chemistry	10	0.6	219	23.1	16	8.7	245	9.0
Biology	2	0.1	120	12.6	1	0.5	123	4.5
Biophysics	6	0.4	25	2.6	2	1.1	33	1.2
Epidemiology and Mathematics	3	0.2	....	....	....	....	3	0.1
Microbiology	18	1.1	75	7.9	2	1.1	95	3.5
Pharmacology	18	1.1	42	4.4	9	4.9	69	2.5
Physiology	32	2.1	51	5.4	11	6.0	94	3.5
Psychology	....	....	15	1.6	....	....	15	0.6
Total	103	6.5	594	62.6	50	27.2	747	27.5
Nonmedical scientific	....	....	29	3.1	....	....	29	1.1
Nonscientific	1	0.1	3	0.3	1	0.5	5	0.2
Not specified	58	3.7	32	3.4	9	4.9	99	3.7
Not applicable†	366	23.2	224	23.6	36	19.6	626	23.1
Grand Total	1576	100.0	949	100.0	184	100.0	2709	100.0

† Still a fellow (257), out of professional work (22), in government service (153), or in full-time private practice (194).

TABLE 43
PAST FELLOWS' APPRAISAL OF THE LENGTH OF THE TERMS OF THEIR
FELLOWSHIPS, BY DEGREE

WAS TERM LONG ENOUGH?	DEGREE						Total	
	N	M.D. %	N	Ph.D. %	N	Both %	N	%
<i>Held junior fellowship</i>								
Yes	1032	67.2	674	72.6	146	83.0	1852	70.2
No*	323	21.0	175	18.9	18	10.2	516	19.5
No†	145	9.4	56	6.0	7	4.0	208	7.9
Not specified	36	2.4	23	2.5	5	2.8	64	2.4
Total past junior fellows	1536	100.0	928	100.0	176	100.0	2640	100.0
Held only senior fellowship	40		21		8		69	
Total past fellows	1576		949		184		2709	
<i>Held senior fellowship</i>								
Yes	158	85.0	63	82.9	39	86.7	260	84.7
No*	13	7.0	8	10.5	2	4.4	23	7.5
No†	6	3.2	2	2.6	2	4.4	10	3.2
Not specified	9	4.8	3	4.0	2	4.5	14	4.6
Total past senior fellows	186	100.0	76	100.0	45	100.0	307	100.0
Held only junior fellowship	1390		873		139		2402	
Total past fellows	1576		949		184		2709	

* Felt it necessary to seek position rather than continue as a fellow.

† Did not feel it necessary to seek position.

TABLE 44
OPINIONS OF FELLOWS WHO WERE NOT PERMITTED TO TAKE ACADEMIC
COURSES REGARDING THE DESIRABILITY OF INCLUDING COURSE WORK AS
A PART OF THE FELLOWSHIP EXPERIENCE, AND COURSES THEY WOULD
LIKE TO HAVE TAKEN, BY DEGREE

ATTITUDE TOWARD COURSES AND SUBJECTS INDICATED	DEGREE						Total	
	N	M.D. %	N	Ph.D. %	N	Both %	N	%
<i>Past fellows</i>								
<i>Courses should be permitted</i>								
Biological sciences*	52	15.4	34	22.1	2	18.2	88	17.5
Chemistry, Biochemistry	145	42.9	51	33.1	4	36.4	200	39.8
Mathematics, Physics	150	44.4	41	26.6	3	27.3	194	38.6
Fellows not permitted to take courses who regarded course work as desirable†	338	100.0	154	100.0	11	100.0	503	100.0
<i>Courses should not be permitted</i>	294		136		11		441	
Total fellows replying‡	632		290		22		944	
Fellows not replying§	944		659		162		1765	
Total past fellows	1576		949		184		2709	

* Anatomy, Physiology, Microbiology, etc.

† The sum of those indicating interest in the three subject areas analyzed may be smaller or larger than the total number of fellows who felt courses should be permitted. This total includes some fellows who specified clinical subjects only and others who indicated interest in more than one of the subject areas analyzed.

‡ Presumably limited to those not permitted to take courses during the tenure of the fellowship.

§ The large group that did not answer the question presumably included those who could have taken courses, those who did take courses, and those who had no opinion on the desirability of courses.

TABLE 44 (Continued)

OPINION OF FELLOWS WHO WERE NOT PERMITTED TO TAKE ACADEMIC COURSES REGARDING THE DESIRABILITY OF INCLUDING COURSE WORK AS A PART OF THE FELLOWSHIP EXPERIENCE, AND COURSES THEY WOULD LIKE TO HAVE TAKEN, BY DEGREE

ATTITUDE TOWARD COURSES AND SUBJECTS INDICATED	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Active junior fellows</i>								
<i>Courses should be permitted</i>								
Biological sciences*	19	24.4	6	19.4	....		25	22.7
Chemistry, Biochemistry	47	60.3	13	41.9	1		61	55.5
Mathematics, Physics	39	50.0	13	41.9	1		53	48.2
Fellows not permitted to take courses who regarded course work as desirable†	78	100.0	31	100.0	1		110	100.0
<i>Courses should not be permitted</i>								
	38		37		1		76	
Total fellows replying‡	116		68		2		186	
Fellows not replying§	139		133		5		277	
Total active junior fellows	255		201		7		463	
<i>Active senior fellows</i>								
<i>Courses should be permitted</i>								
Biological sciences*	13	34.2	6	35.3	....		19	33.9
Chemistry, Biochemistry	19	50.0	6	35.3	....		25	44.6
Mathematics, Physics	26	68.4	6	35.3	....		32	57.1
Fellows not permitted to take courses who regarded course work as desirable†	38	100.0	17	100.0	1		56	100.0
<i>Courses should not be permitted</i>								
	27		16		5		48	
Total fellows replying‡	65		33		6		104	
Fellows not replying§	105		61		19		185	
Total active senior fellows	170		94		25		289	
<i>All fellows</i>								
<i>Courses should be permitted</i>								
Biological sciences*	84	18.5	46	22.8	2	15.4	132	19.7
Chemistry, Biochemistry	211	46.5	70	34.7	5	38.5	286	42.8
Mathematics, Physics	215	47.4	60	29.7	4	30.8	279	41.7
Fellows not permitted to take courses who regarded course work as desirable†	454	100.0	202	100.0	13	100.0	669	100.0
<i>Courses should not be permitted</i>								
	359		189		17		565	
Total fellows replying‡	813		391		30		1234	
Fellows not replying§	1188		853		186		2227	
Grand Total	2001		1244		216		3461	

* See previous page.

† See previous page.

‡ See previous page.

§ See previous page.

TABLE 45
THE FELLOWS' APPRAISAL OF THE INFLUENCE OF THE FELLOWSHIP
EXPERIENCE ON THEIR CAREERS

HAS YOUR FELLOWSHIP EXPERIENCE:	Past		Active Senior		Total	
	N	%	N	%	N	%
<i>Confirmed your dedication to research?</i>						
Yes	1976	72.9	224	77.5	2200	73.4
No	409	15.1	27	9.3	436	14.5
Not specified	324	12.0	38	13.2	362	12.1
Total	2709	100.0	289	100.0	2998	100.0
<i>Influenced you not to continue in research?</i>						
Yes	117	4.3	3	1.0	120	4.0
No	907	33.5	199	68.9	1106	36.9
Not specified	1685	62.2	87	30.1	1772	59.1
Total	2709	100.0	289	100.0	2998	100.0
<i>Influenced you to seek a career combining research and other academic responsibilities?</i>						
Yes	1763	65.1	208	72.0	1971	65.7
No	509	18.8	35	12.1	544	18.2
Not specified	437	16.1	46	15.9	483	16.1
Total	2709	100.0	289	100.0	2998	100.0

TABLE 46
CAREER CHOICES OF PAST AND ACTIVE FELLOWS (ECONOMIC REWARDS BEING EQUAL),
BY DEGREE

CAREER CHOICES	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
<i>M.D.</i>								
FT university	772	49.0	144	56.5	124	72.9	1040	52.0
FT research	179	11.3	27	10.6	7	4.1	213	10.6
Geographic FT	440	27.9	56	21.9	26	15.3	522	26.1
FT practice	53	3.4	7	2.7	*	....	60	3.0
Combinations of above	93	5.9	17	6.7	10	5.9	120	6.0
Not specified	39	2.5	4	1.6	3	1.8	46	2.3
Total	1576	100.0	255	100.0	170	100.0	2001	100.0
<i>Ph.D.</i>								
FT university	709	74.7	155	77.1	74	78.7	938	75.4
FT research	202	21.3	37	18.4	14	14.9	253	20.3
Geographic FT	8	0.8	2	1.0	....	....	10	0.8
FT practice	....	....	....	....	*	....	....	....
Combinations of above	17	1.8	5	2.5	5	5.3	27	2.2
Not specified	13	1.4	2	1.0	1	1.1	16	1.3
Total	949	100.0	201	100.0	94	100.0	1244	100.0
<i>Both</i>								
FT university	123	66.8	4	57.1	21	84.0	148	68.5
FT research	28	15.2	2	28.6	1	4.0	31	14.3
Geographic FT	17	9.2	1	14.3	2	8.0	20	9.3
FT practice	2	1.1	....	....	*	....	2	0.9
Combinations of above	13	7.1	....	....	1	4.0	14	6.5
Not specified	1	0.6	....	....	....	....	1	0.5
Total	184	100.0	7	100.0	25	100.0	216	100.0
<i>Total</i>								
FT university	1604	59.2	303	65.4	219	75.8	2126	61.4
FT research	409	15.1	66	14.3	22	7.6	497	14.4
Geographic FT	465	17.2	59	12.7	28	9.7	552	15.9
FT practice	55	2.0	7	1.5	*	....	62	1.8
Combinations of above	123	4.5	22	4.8	16	5.5	161	4.7
Not specified	53	2.0	6	1.3	4	1.4	63	1.8
Grand Total	2709	100.0	463	100.0	289	100.0	3461	100.0

* Active senior fellows were not questioned about their interest in full-time private practice.

TABLE 47
CAREER CHOICES OF PAST AND ACTIVE FELLOWS (UNDER THE REALITIES OF PRESENT-DAY ECONOMICS), BY DEGREE

CAREER CHOICES	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
<i>M.D.</i>								
FT university	451	28.6	88	34.5	97	57.1	636	31.8
FT research	90	5.7	14	5.5	7	4.1	111	5.6
Geographic FT	441	28.0	79	31.0	45	26.5	565	28.2
FT practice	274	17.4	27	10.6	*	....	301	15.0
Other careers	93	5.9	14	5.5	1	0.6	108	5.4
Combinations of above	98	6.2	17	6.6	7	4.1	122	6.1
Not specified	129	8.2	16	6.3	13	7.6	158	7.9
Total	1576	100.0	255	100.0	170	100.0	2001	100.0
<i>Ph.D.</i>								
FT university	526	55.4	134	66.6	62	65.9	722	58.0
FT research	263	27.7	44	21.9	16	17.0	323	26.0
Geographic FT	13	1.4	4	2.0	1	1.1	18	1.4
FT practice	5	0.5	....	....	*	....	5	0.4
Other careers	25	2.6	2	1.0	4	4.3	31	2.5
Combinations of above	29	3.1	5	2.5	4	4.3	38	3.1
Not specified	88	9.3	12	6.0	7	7.4	107	8.6
Total	949	100.0	201	100.0	94	100.0	1244	100.0
<i>Both</i>								
FT university	86	46.7	2	28.6	17	68.0	105	48.6
FT research	25	13.6	1	14.3	....	....	26	12.0
Geographic FT	24	13.0	2	28.6	2	8.0	28	13.0
FT practice	9	4.9	1	14.2	*	....	10	4.6
Other careers	9	4.9	....	....	....	....	9	4.2
Combinations of above	13	7.1	1	14.3	....	....	14	6.5
Not specified	18	9.8	....	....	6	24.0	24	11.1
Total	184	100.0	7	100.0	25	100.0	216	100.0
<i>Total</i>								
FT university	1063	39.2	224	48.4	176	60.9	1463	42.3
FT research	378	14.0	59	12.7	23	8.0	460	13.3
Geographic FT	478	17.6	85	18.4	48	16.6	611	17.7
FT practice	288	10.6	28	6.0	*	....	316	9.1
Other careers	127	4.7	16	3.5	5	1.7	148	4.3
Combinations of above	140	5.2	23	5.0	11	3.8	174	5.0
Not specified	235	8.7	28	6.0	26	9.0	289	8.3
Grand Total	2709	100.0	463	100.0	289	100.0	3461	100.0

* Active senior fellows were not questioned about their interest in full-time private practice.

TABLE 48
EFFECT OF ECONOMIC CONSIDERATIONS ON THE CAREER CHOICES OF PAST FELLOWS,
BY DEGREE

CAREER CHOICE— Under present economic realities	FT university	FT re- search	Geographic FT	FT practice	Combina- tions	Not specified	Total
<i>M.D.</i>							
FT university	398	37	6	....	10	....	451
FT research	16	66	3	....	5	....	90
Geographic FT	158	35	222	....	25	1	441
FT practice	65	13	131	43	22	....	274
Other careers	32	12	24	4	5	16	93
Combinations of above	36	5	29	3	19	6	98
Not specified	67	11	25	3	7	16	129
Total	772	179	440	53	93	39	1576
<i>Ph.D.</i>							
FT university	491	30	....	....	5	....	526
FT research	120	135	1	....	7	....	263
Geographic FT	4	3	6	....	....	....	13
FT practice	4	1	....	....	....	....	5
Other careers	15	7	....	....	2	1	25
Combinations of above	15	11	....	....	2	1	29
Not specified	60	15	1	....	1	11	88
Total	709	202	8	....	17	13	949
<i>Both</i>							
FT university	76	9	....	....	1	....	86
FT research	7	14	1	....	3	....	25
Geographic FT	12	2	9	....	1	....	24
FT practice	6	....	....	2	1	....	9
Other careers	5	1	2	....	1	....	9
Combinations of above	6	....	2	....	5	....	13
Not specified	11	2	3	....	1	1	18
Total	123	28	17	2	13	1	184
<i>Total</i>							
FT university	965	76	6	....	16	....	1063
FT research	143	215	5	....	15	....	378
Geographic FT	174	40	237	....	26	1	478
FT practice	75	14	131	45	23	....	288
Other careers	52	20	26	4	8	17	127
Combinations of above	57	16	31	3	26	7	140
Not specified	138	28	29	3	9	28	235
Grand Total	1604	409	465	55	123	53	2709

TABLE 49
CAREER PREFERENCES OF PAST FELLOWS UNDER THE REALITIES OF PRESENT-DAY
ECONOMICS, BY POSITION HELD IN 1958

POSITION IN 1958	FT uni- versity		FT re- search		Geographic FT		FT prac- tice		Other careers		Combina- tions		Not specified		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
PT academic medicine	77	7.2	11	2.9	108	22.6	97	33.7	40	31.5	42	30.0	37	15.8	412	15.2
PT academic, nonmedical	6	0.6	3	0.8	1	0.2	3	1.0	2	1.6	3	2.1	1	0.4	19	0.7
FT hospital	12	1.1	10	2.6	23	4.8	16	5.6	7	5.5	5	3.6	4	1.7	77	2.8
FT research	18	1.7	39	10.3	2	0.4	....	....	2	1.6	1	0.7	10	4.3	72	2.7
Hospital and research	6	0.6	8	2.1	7	1.5	1	0.3	....	....	....	....	1	0.4	23	0.8
FT practice	7	0.7	....	....	27	5.6	114	39.6	22	17.3	12	8.6	12	5.1	194	7.2
Industry	12	1.1	17	4.5	1	0.2	3	1.0	13	10.2	6	4.3	9	3.8	61	2.3
Government	35	3.3	77	20.4	9	1.9	4	1.4	7	5.5	6	4.3	15	6.4	153	5.6
Not applicable*	118	11.1	40	10.6	64	13.4	16	5.6	5	3.9	14	10.0	22	9.4	279	10.3
Other positions	11	1.0	10	2.7	9	1.9	4	1.4	7	5.5	3	2.1	5	2.1	49	1.8
Total not in FT academic work	302	28.4	215	56.9	251	52.5	258	89.6	105	82.6	92	65.7	116	49.4	1339	49.4
Already in FT aca- demic work	761	71.6	163	43.1	227	47.5	30	10.4	22	17.4	48	34.3	119	50.6	1370	50.6
Total past fellows	1063	100.0	378	100.0	478	100.0	288	100.0	127	100.0	140	100.0	235	100.0	2709	100.0

* Still on fellowship (257) or out of professional work (22).

TABLE 50
INTEREST OF PAST FELLOWS IN FULL-TIME ACADEMIC WORK, BY POSITION HELD IN 1958
INTEREST IN FT ACADEMIC WORK

POSITION	Interested		Not interested		Not specified†		Total	
	N	%	N	%	N	%	N	%
PT academic medicine	199	48.3	64	15.5	149	36.2	412	100.0
PT academic, nonmedical	16	84.2	....	....	3	15.8	19	100.0
FT hospital	56	72.7	15	19.5	6	7.8	77	100.0
FT research	54	75.0	4	5.6	14	19.4	72	100.0
Hospital and research	21	91.3	....	....	2	8.7	23	100.0
FT practice	109	56.2	63	32.5	22	11.3	194	100.0
Industry	48	78.7	10	16.4	3	4.9	61	100.0
Government	129	84.3	9	5.9	15	9.8	153	100.0
Not applicable*	145	52.0	11	3.9	123	44.1	279	100.0
Other positions	41	83.6	6	12.2	2	4.2	49	100.0
Total not in FT academic work	818	61.1	182	13.6	339	25.3	1339	100.0
Already in FT academic work	249	....	10	....	1111	....	1370	....
Total past fellows	1067	....	192	....	1450	....	2709	....

* Still on fellowship (257) or out of professional work (22).

† Includes 181 who specified a rank, but did not answer the question directly. Of these, 105 were already in FT academic work.

TABLE 51
ALTERNATIVES TO CONTINUED FELLOWSHIP SUPPORT THAT ACTIVE JUNIOR AND SENIOR FELLOWS WOULD CONSIDER, BY DESIRE FOR CONTINUED FELLOWSHIP SUPPORT
ALTERNATIVES TO CONTINUED FELLOWSHIP SUPPORT

FELLOWSHIP SUPPORT	Yes		No		Un-decided		Not specified		Total	
	N	%	N	%	N	%	N	%	N	%
<i>Junior fellows</i>										
<i>Prefer FT academic post</i>										
Would consider employment under research grant	71	39.9	84	42.2	35	43.2	1	20.0	191	41.3
Would not consider employment under research grant	77	43.3	87	43.7	35	43.2	2	40.0	201	43.4
<i>Prefer employment under research grant</i>										
Would consider FT academic post	16	9.0	12	6.1	4	4.9	....	....	32	6.9
Would not consider FT academic post	9	5.1	4	2.0	4	5.0	....	....	17	3.7
<i>No preference</i>										
Would consider either	1	0.5	....	....	....	....	....	....	1	0.2
Would consider neither	3	1.7	7	3.5	....	....	1	20.0	11	2.4
<i>Preference not specified</i>	1	0.5	5	2.5	3	3.7	1	20.0	10	2.1
Total junior fellows	178	100.0	199	100.0	81	100.0	5	100.0	463	100.0
<i>Senior fellows</i>										
<i>Prefer FT academic post</i>										
Would consider employment under research grant	10	21.7	20	11.1	14	36.9	3	12.0	47	16.3
Would not consider employment under research grant	29	63.0	145	80.6	19	50.0	11	44.0	204	70.6
<i>Prefer employment under research grant</i>										
Would consider FT academic post	2	4.4	1	0.5	3	7.9	....	....	6	2.1
Would not consider FT academic post	....	....	....	....	....	....	....	....	....	....
<i>No preference</i>										
Would consider either	3	6.5	....	....	....	....	....	....	3	1.0
Would consider neither	....	....	2	1.1	1	2.6	....	....	3	1.0
<i>Preference not specified</i>	2	4.4	12	6.7	1	2.6	11	44.0	26	9.0
Total senior fellows	46	100.0	180	100.0	38	100.0	25	100.0	289	100.0

TABLE 52

DEPARTMENTS IN WHICH PAST FELLOWS NOT IN FULL-TIME ACADEMIC LIFE WOULD SEEK ACADEMIC POSITIONS, BY INTEREST IN FULL-TIME ACADEMIC WORK

DEPARTMENT	Would consider		Not specified		Total	
	N	%	N	%	N	%
<i>Past fellows not in FT academic positions</i>						
<i>Clinical</i>						
Medicine and specialties	299	36.5	27	8.0	326	24.3
Obstetrics and Gynecology	7	0.9	....	....	7	0.5
Ophthalmology	5	0.6	....	....	5	0.4
Pathology	38	4.6	2	0.6	40	3.0
Pediatrics	30	3.7	3	0.9	33	2.5
Physical Medicine and Public Health	4	0.5	....	....	4	0.3
Psychiatry and Neurology	25	3.0	4	1.2	29	2.2
Radiology	7	0.9	1	0.3	8	0.6
Surgery and specialties	79	9.7	8	2.3	87	6.5
Total	494	60.4	45	13.3	539	40.3
<i>Preclinical</i>						
Anatomy	9	1.1	2	0.6	11	0.8
Biochemistry and Chemistry	147	18.0	10	2.9	157	11.7
Biology	35	4.3	2	0.6	37	2.8
Biophysics	17	2.1	....	....	17	1.3
Epidemiology and Mathematics	3	0.4	....	....	3	0.2
Microbiology	37	4.5	3	0.9	40	3.0
Pharmacology	10	1.2	2	0.6	12	0.9
Physiology	35	4.3	5	1.5	40	3.0
Psychology	7	0.8	....	....	7	0.5
Total	300	36.7	24	7.1	324	24.2
Nonmedical scientific	5	0.6	1	0.3	6	0.4
Nonscientific	2	0.2	....	....	2	0.1
Not specified	17	2.1	269	79.3	286	21.4
Not applicable*	....	....	....	....	182	13.6
Total in FT academic or non-academic positions	818	100.0	339	100.0	1339	100.0
Past fellows in FT academic positions†	....	....	....	....	1370	....
Total past fellows	818	....	339	....	2709	....

* Would not consider FT academic work.

† Past fellows in FT academic positions were not expected to answer the question regarding their willingness to consider such positions. Of the 1370 in this category, 249 answered the question in the affirmative, and 10 answered in the negative.

TABLE 53
DEPARTMENTS IN WHICH PAST AND ACTIVE FELLOWS WOULD SEEK ACADEMIC POSITIONS,
BY DEGREE

DEPARTMENT	M.D.		DEGREE				Total	
	N	%	N	Ph.D.	%	Both	N	%
<i>Past fellows</i>								
<i>Interested, but not in FT academic work</i>								
<i>Clinical</i>								
Medicine and specialties	274	54.5	3	1.1	22	43.1	299	36.5
Obstetrics and Gynecology	6	1.2	....	....	1	2.0	7	0.9
Ophthalmology	5	1.0	....	....	....	....	5	0.6
Pathology	31	6.1	3	1.1	4	7.8	38	4.6
Pediatrics	29	5.7	....	....	1	2.0	30	3.7
Physical Medicine and Public Health	4	0.8	....	....	....	....	4	0.5
Psychiatry and Neurology	23	4.6	....	....	2	3.9	25	3.0
Radiology	6	1.2	1	0.4	....	....	7	0.9
Surgery and specialties	78	15.5	....	....	1	2.0	79	9.7
Total	456	90.6	7	2.6	31	60.8	494	60.4
<i>Preclinical</i>								
Anatomy	1	0.2	7	2.6	1	2.0	9	1.1
Biochemistry and Chemistry	7	1.4	133	50.4	7	13.7	147	18.0
Biology	1	0.2	34	12.9	....	....	35	4.3
Biophysics	2	0.4	11	4.2	4	7.8	17	2.1
Epidemiology and Mathematics	3	0.6	....	....	....	....	3	0.4
Microbiology	2	0.4	33	12.5	2	3.9	37	4.5
Pharmacology	2	0.4	7	2.6	1	2.0	10	1.2
Physiology	16	3.2	16	6.1	3	5.9	35	4.3
Psychology	....	....	7	2.7	....	....	7	0.8
Total	34	6.8	248	94.0	18	35.3	300	36.7
Nonmedical scientific	....	....	5	1.9	....	....	5	0.6
Nonscientific	1	0.2	1	0.4	....	....	2	0.2
Department not specified	12	2.4	3	1.1	2	3.9	17	2.1
Total interested, but not in FT academic work	503	100.0	264	100.0	51	100.0	818	100.0
<i>Did not specify whether interested</i>	252	....	57	....	30	....	339*	....
<i>Would not consider FT academic work</i>	158	....	22	....	2	....	182	....
Total not in FT academic work	913	....	343	....	83	....	1339	....
<i>Past fellows in FT academic work</i>	663	....	606	....	101	....	1370	....
Total past fellows	1576	....	949	....	184	....	2709	....
<i>Active junior fellows</i>								
<i>Clinical</i>								
Medicine and specialties	144	56.5	....	....	1	14.3	145	31.3
Obstetrics and Gynecology	2	0.8	....	....	....	....	2	0.4
Ophthalmology	....	....	....	....	....	....	....	....
Pathology	18	7.0	2	1.0	....	....	20	4.3
Pediatrics	26	10.2	....	....	....	....	26	5.6
Physical Medicine and Public Health	....	....	....	....	....	....	....	....
Psychiatry and Neurology	5	1.9	1	0.5	....	....	6	1.3
Radiology	3	1.2	....	....	....	....	3	0.7
Surgery and specialties	16	6.3	....	....	3	42.8	19	4.1
Total	214	83.9	3	1.5	4	57.1	221	47.7

* Of the 339 who did not specify whether interested in academic work, 70 specified department, and 269 did not.

TABLE 53 (Continued)
DEPARTMENTS IN WHICH PAST AND ACTIVE FELLOWS WOULD SEEK ACADEMIC POSITIONS,
BY DEGREE

DEPARTMENT	M.D.		DEGREE				Total	
	N	%	N	Ph.D.	%	Both	N	%
<i>Active junior fellows (continued)</i>								
<i>Preclinical</i>								
Anatomy	1	0.4	11	5.5	....	....	12	2.6
Biochemistry and Chemistry	6	2.3	80	39.8	2	28.6	88	19.0
Biology	....	....	30	14.9	....	....	30	6.5
Biophysics	3	1.2	10	5.0	....	....	13	2.8
Epidemiology and Mathematics	2	0.8	....	....	....	....	2	0.4
Microbiology	3	1.2	19	9.4	....	....	22	4.8
Pharmacology	3	1.2	4	2.0	....	....	7	1.5
Physiology	14	5.5	25	12.4	1	14.3	40	8.6
Psychology	....	....	7	3.5	....	....	7	1.5
Total	32	12.6	186	92.5	3	42.9	221	47.7
Nonmedical scientific	....	....	5	2.5	....	....	5	1.1
Nonscientific	....	....	....	....	....	....	....	....
Department not specified	9	3.5	7	3.5	....	....	16	3.5
Total active junior fellows	255	100.0	201	100.0	7	100.0	463	100.0
<i>Active senior fellows</i>								
<i>Clinical</i>								
Medicine and specialties	69	40.6	....	....	3	12.0	72	25.0
Obstetrics and Gynecology	5	2.9	....	....	....	....	5	1.7
Ophthalmology	1	0.6	....	....	....	....	1	0.3
Pathology	7	4.1	....	....	2	8.0	9	3.1
Pediatrics	20	11.8	....	....	1	4.0	21	7.3
Physical Medicine and Public Health	....	....	....	....	....	....	....	....
Psychiatry and Neurology	10	5.9	....	....	....	....	10	3.5
Radiology	3	1.8	....	....	....	....	3	1.0
Surgery and specialties	21	12.3	....	....	8	32.0	29	10.0
Total	136	80.0	....	....	14	56.0	150	51.9
<i>Preclinical</i>								
Anatomy	2	1.2	9	9.6	1	4.0	12	4.2
Biochemistry and Chemistry	5	2.9	35	37.2	1	4.0	41	14.2
Biology	....	....	5	5.3	....	....	5	1.7
Biophysics	....	....	3	3.2	....	....	3	1.0
Epidemiology and Mathematics	1	0.6	....	....	....	....	1	0.3
Microbiology	3	1.8	10	10.6	....	....	13	4.5
Pharmacology	4	2.3	4	4.3	2	8.0	10	3.5
Physiology	10	5.9	15	16.0	3	12.0	28	9.7
Psychology	....	....	3	3.2	....	....	3	1.0
Total	25	14.7	84	89.4	7	28.0	116	40.1
Nonmedical scientific	....	....	....	....	....	....	....	....
Nonscientific	....	....	....	....	....	....	....	....
Department not specified	9	5.3	10	10.6	4	16.0	23	8.0
Total active senior fellows	170	100.0	94	100.0	25	100.0	289	100.0

TABLE 53 (Continued)

DEPARTMENTS IN WHICH PAST AND ACTIVE FELLOWS WOULD SEEK ACADEMIC POSITIONS,
BY DEGREE

DEPARTMENT	M.D.		DEGREE				Total	
	N	%	N	Ph.D.	%	N	Both	%
<i>All fellows</i>								
<i>Not in FT academic work</i>								
<i>Clinical</i>								
Medicine and specialties	487	52.5	3	0.5	26	31.3	516	32.9
Obstetrics and Gynecology	13	1.4	....	....	1	1.2	14	0.9
Ophthalmology	6	0.7	....	....	....	....	6	0.4
Pathology	56	6.0	5	0.9	6	7.2	67	4.3
Pediatrics	75	8.1	....	....	2	2.4	77	4.9
Physical Medicine and Public Health	4	0.4	....	....	....	....	4	0.2
Psychiatry and Neurology	38	4.1	1	0.2	2	2.4	41	2.6
Radiology	12	1.3	1	0.2	....	....	13	0.8
Surgery and specialties	115	12.4	....	....	12	14.5	127	8.1
Total	806	86.9	10	1.8	49	59.0	865	55.1
<i>Preclinical</i>								
Anatomy	4	0.4	27	4.8	2	2.4	33	2.1
Biochemistry and Chemistry	18	1.9	248	44.4	10	12.1	276	17.6
Biology	1	0.1	69	12.3	....	....	70	4.4
Biophysics	5	0.5	24	4.3	4	4.8	33	2.1
Epidemiology and Mathematics	6	0.7	....	....	....	....	6	0.4
Microbiology	8	0.9	62	11.1	2	2.4	72	4.6
Pharmacology	9	1.0	15	2.7	3	3.6	27	1.7
Physiology	40	4.3	56	10.0	7	8.5	103	6.6
Psychology	....	....	17	3.0	....	....	17	1.1
Total	91	9.8	518	92.6	28	33.8	637	40.6
Nonmedical scientific	....	....	10	1.8	....	....	10	0.6
Nonscientific	1	0.1	1	0.2	....	....	2	0.1
Department not specified	30	3.2	20	3.6	6	7.2	56	3.6
Total*	928	100.0	559	100.0	83	100.0	1570	100.0
<i>Past fellows not specifying interest or not interested in FT academic work</i>								
	410		79		32		521	
<i>Total not in FT academic work</i>								
	1338		638		115		2091	
<i>Past fellows in FT academic work</i>								
	663		606		101		1370	
Grand Total	2001		1244		216		3461	

* These totals include all present fellows. They include only those past fellows who are not already in FT academic work, but would consider such positions. Active fellows were not asked whether they would consider FT academic work.

TABLE 54
DEPARTMENTS IN WHICH PAST AND ACTIVE FELLOWS WOULD SEEK ACADEMIC POSITIONS,
BY CAREER CHOICE (UNDER PRESENT ECONOMIC CONDITIONS)

DEPARTMENT	FT uni-		FT re-		Geographic		CAREER CHOICE		Other		Combina-		Not		Total	
	N	%	N	%	N	%	FT pre-	%	N	%	N	%	N	%	N	%
<i>Past fellows</i>																
<i>Not in FT academic work</i>																
<i>Clinical</i>																
Medicine and specialties	45	13.8	22	6.7	89	27.3	82	25.2	32	9.8	26	8.0	30	9.2	326	100.0
Obstetrics and Gynecology	1	14.3			1	14.3	3	42.9					2	28.5	7	100.0
Ophthalmology					2	40.0	3	60.0							5	100.0
Pathology	10	25.0	3	7.5	8	20.0	9	22.5	7	17.5	1	2.5	2	5.0	40	100.0
Pediatrics	6	18.2	3	9.1	6	18.2	10	30.3	3	9.1	4	12.1	1	3.0	33	100.0
Physical Medicine and																
Public Health	1	25.0			1	25.0					1	25.0	1	25.0	4	100.0
Psychiatry and Neurology	5	17.2	2	6.9	6	20.7	4	13.8	4	13.8	7	24.1	1	3.5	29	100.0
Radiology	1	12.5	1	12.5	1	12.5	4	50.0	1	12.5					8	100.0
Surgery and specialties	7	8.1	1	1.1	28	32.2	26	29.9	8	9.2	8	9.2	9	10.3	87	100.0
Total	76	14.1	32	5.9	142	26.4	141	26.2	55	10.2	47	8.7	46	8.5	539	100.0
<i>Preclinical</i>																
Anatomy	5	45.4	4	36.4									2	18.2	11	100.0
Biochemistry and Chemistry	50	31.9	68	43.3	1	0.6	2	1.3	13	8.3	6	3.8	17	10.8	157	100.0
Biology	17	46.0	12	32.4					3	8.1	2	5.4	3	8.1	37	100.0
Biophysics	4	23.5	9	52.9	1	5.9			1	5.9	2	11.8			17	100.0
Epidemiology and Mathematics					1	33.3			1	33.3	1	33.4			3	100.0
Microbiology	12	30.0	20	50.0	1	2.5			1	2.5			6	15.0	40	100.0
Pharmacology	5	41.7	5	41.7			1	8.3			1	8.3			12	100.0
Physiology	14	36.0	14	36.0	1	2.5	2	5.0	3	7.5	5	12.5	1	2.5	40	100.0
Psychology	3	42.9	2	28.5	1	14.3	1	14.3							7	100.0
Total	110	34.0	134	41.4	6	1.8	6	1.8	22	6.8	17	5.2	29	9.0	324	100.0
Nonmedical scientific	2	33.3	3	50.0							1	16.7			6	100.0
Nonscientific									1	50.0	1	50.0			2	100.0
Department not specified	113	39.5	26	9.1	92	32.2	12	4.2	5	1.7	8	2.8	30	10.5	286	100.0
Not interested	1	0.5	20	11.0	11	6.0	99	54.4	22	12.1	18	9.9	11	6.1	182	100.0
Total not in FT																
academic work																
<i>In FT academic work</i>																
Total past fellows	302	22.6	215	16.1	251	18.7	258	19.3	105	7.8	92	6.9	116	8.6	1339	100.0
	761	55.5	163	11.9	227	16.6	30	2.2	22	1.6	48	3.5	119	8.7	1370	100.0
	1063	39.2	378	14.0	478	17.6	288	10.6	127	4.7	140	5.2	235	8.7	2709	100.0

TABLE 54 (Continued)
DEPARTMENTS IN WHICH PAST AND ACTIVE FELLOWS WOULD SEEK ACADEMIC POSITIONS,
BY CAREER CHOICE (UNDER PRESENT ECONOMIC CONDITIONS)

DEPARTMENT	FT uni- versity		FT re- search		Geographic		FT prac- tice		Other career		Combina- tions		Not specified		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<i>Active junior fellows</i>																
<i>Clinical</i>																
Medicine and specialties	34	23.4	5	3.4	53	36.6	21	14.5	11	7.6	12	8.3	9	6.2	145	100.0
Obstetrics and Gynecology	...	...	1	50.0	...	...	...	...	...	...	1	50.0	...	...	2	100.0
Pathology	12	60.0	2	10.0	3	15.0	...	...	1	5.0	...	...	2	10.0	20	100.0
Pediatrics	14	53.8	...	...	8	30.8	3	11.5	...	...	...	...	1	3.9	26	100.0
Psychiatry and Neurology	1	16.7	...	...	2	33.3	...	...	1	16.7	...	...	2	33.3	6	100.0
Radiology	2	66.7	...	...	1	33.3	...	...	...	...	...	...	...	...	3	100.0
Surgery and specialties	4	21.1	...	...	9	47.4	4	21.1	1	5.2	1	5.2	...	...	19	100.0
Total	67	30.3	8	3.6	76	34.4	28	12.7	14	6.3	14	6.3	14	6.4	221	100.0
<i>Preclinical</i>																
Anatomy	10	83.3	2	16.7	...	...	...	...	1	1.2	2	2.3	...	...	12	100.0
Biochemistry and Chemistry	52	59.1	23	26.1	4	4.5	...	...	1	3.3	...	...	6	6.8	88	100.0
Biology	24	80.0	3	10.0	...	...	...	...	1	3.3	...	...	2	6.7	30	100.0
Biophysics	8	61.5	4	30.8	...	...	...	...	...	...	...	...	1	7.7	13	100.0
Epidemiology and Mathematics	...	...	1	50.0	...	...	...	...	...	...	1	50.0	...	...	2	100.0
Microbiology	16	72.7	4	18.2	1	4.5	...	...	...	...	1	4.5	...	...	22	100.0
Pharmacology	5	71.4	2	28.6	...	...	...	...	...	...	...	...	...	...	7	100.0
Physiology	27	67.5	8	20.0	...	...	...	...	...	...	4	10.0	1	2.5	40	100.0
Psychology	5	71.4	1	14.3	1	14.3	...	...	...	...	...	...	...	...	7	100.0
Total	147	66.5	48	21.7	6	2.7	...	...	2	0.9	8	3.6	10	4.6	221	100.0
<i>Nonmedical scientific</i>																
Department not specified	4	80.0	...	...	...	...	...	...	...	...	1	20.0	...	...	5	100.0
Total active junior fellows	224	48.4	59	12.7	85	18.4	28	6.0	16	3.5	23	5.0	28	6.0	463	100.0

TABLE 54 (Continued)
DEPARTMENTS IN WHICH PAST AND ACTIVE FELLOWS WOULD SEEK ACADEMIC POSITIONS,
BY CAREER CHOICE (UNDER PRESENT ECONOMIC CONDITIONS)

DEPARTMENT	FT uni- versity		FT re- search		Geographic FT		FT prac- tice		Other careers		Combina- tions		Not specified		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<i>All fellows not in FT academic work</i>																
<i>Clinical</i>																
Medicine and specialties	122	22.5	28	5.1	163	30.0	103	19.0	43	7.9	39	7.2	45	8.3	543	100.0
Obstetrics and Gynecology	2	14.3	1	7.2	3	21.4	3	21.4	...	...	2	14.3	3	21.4	14	100.0
Ophthalmology	...	...	...	...	3	50.0	3	50.0	...	...	...	...	...	...	6	100.0
Pathology	30	43.5	5	7.2	12	17.4	9	13.0	8	11.6	1	1.5	4	5.8	69	100.0
Pediatrics	32	40.0	5	6.3	18	22.5	13	16.2	4	5.0	4	5.0	4	5.0	80	100.0
Physical Medicine and Public Health	1	25.0	...	...	1	25.0	...	...	...	...	1	25.0	1	25.0	4	100.0
Psychiatry and Neurology	11	24.4	3	6.7	11	24.4	4	8.9	5	11.1	8	17.8	3	6.7	45	100.0
Radiology	5	35.7	1	7.1	3	21.4	4	28.6	1	7.2	...	...	...	...	14	100.0
Surgery and specialties	23	17.0	2	1.5	47	34.8	30	22.2	9	6.7	11	8.2	13	9.6	135	100.0
Total	226	24.8	45	4.9	261	28.7	169	18.6	70	7.7	66	7.3	73	8.0	910	100.0
<i>Preclinical</i>																
Anatomy	25	71.4	7	20.0	...	...	...	...	16	5.6	10	3.5	...	...	35	100.0
Biochemistry and Chemistry	126	44.1	98	34.3	5	1.7	2	0.7	...	...	...	...	29	10.1	286	100.0
Biology	45	62.5	15	20.8	...	...	...	...	4	5.6	3	4.2	5	6.9	72	100.0
Biophysics	14	42.4	14	42.4	1	3.0	...	...	1	3.0	2	6.1	1	3.1	33	100.0
Epidemiology and Mathematics	1	16.7	1	16.7	1	16.7	...	...	1	16.6	2	33.3	...	...	6	100.0
Microbiology	35	46.6	28	37.3	2	2.7	...	...	2	2.7	2	2.7	6	8.0	75	100.0
Pharmacology	20	69.0	7	24.1	...	...	1	3.4	...	...	1	3.5	...	...	29	100.0
Physiology	61	56.5	24	22.2	2	1.8	2	1.9	4	3.7	11	10.2	4	3.7	108	100.0
Psychology	9	52.9	5	29.4	2	11.8	1	5.9	...	...	...	...	...	...	17	100.0
Total	336	50.8	199	30.1	13	2.0	6	0.9	28	4.2	31	4.7	48	7.3	661	100.0
Nonmedical scientific	6	54.5	3	27.3	...	...	...	...	...	...	2	18.2	...	...	11	100.0
Nonscientific	133	40.9	30	9.2	99	30.5	12	3.7	1	50.0	1	50.0	...	...	2	100.0
Department not specified	...	...	...	...	...	...	...	...	5	1.5	8	2.5	38	11.7	325	100.0
Not interested (past only)	1	0.3	20	11.0	11	6.0	99	54.4	22	12.1	18	9.9	11	6.0	182	100.0
<i>Total not in FT academic work</i>																
In FT academic work (past only)	702	33.6	297	14.2	384	18.4	286	13.7	126	6.0	126	6.0	170	8.1	2091	100.0
Grand Total	761	55.5	163	11.9	227	16.6	30	2.2	22	1.6	48	3.5	119	8.7	1370	100.0
	1463	42.3	460	13.3	611	17.7	316	9.1	148	4.3	174	5.0	229	8.3	3461	100.0

TABLE 55
FACULTY RANKS FOR WHICH PAST AND ACTIVE FELLOWS CONSIDER THEMSELVES
QUALIFIED, BY DEGREE

FACULTY RANK	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Past fellows</i>								
<i>Not in FT academic work, but interested</i>								
Professor	73	14.5	45	17.0	19	37.2	137	16.7
Associate Professor	157	31.2	95	36.0	20	39.2	272	33.3
Assistant Professor	195	38.8	115	43.6	10	19.6	320	39.1
Instructor	66	13.1	6	2.3	1	2.0	73	8.9
Rank not specified	12	2.4	3	1.1	1	2.0	16	2.0
Total interested in FT academic work	503	100.0	264	100.0	51	100.0	818	100.0
Did not specify whether interested	252		57		30		339	
Would not consider FT academic work	158		22		2		182	
Total not in FT academic work	913		343		83		1339	
Past fellows in FT academic work	663		606		101		1370	
Total past fellows	1576		949		184		2709	
<i>Active junior fellows</i>								
Professor	3	1.2	4	2.0	---	---	7	1.5
Associate Professor	17	6.7	15	7.5	1	14.3	33	7.1
Assistant Professor	112	43.9	138	68.6	5	71.4	255	55.1
Instructor	111	43.5	36	17.9	1	14.3	148	32.0
Rank not specified	12	4.7	8	4.0	---	---	20	4.3
Total junior fellows	255	100.0	201	100.0	7	100.0	463	100.0
<i>Active senior fellows</i>								
Professor	37	21.8	28	29.8	8	32.0	73	25.3
Associate Professor	77	45.3	43	45.7	8	32.0	128	44.3
Assistant Professor	43	25.3	12	12.8	5	20.0	60	20.8
Instructor	4	2.3	1	1.1	---	---	5	1.7
Rank not specified	9	5.3	10	10.6	4	16.0	23	7.9
Total senior fellows	170	100.0	94	100.0	25	100.0	289	100.0
<i>All fellows</i>								
<i>Not in FT academic work</i>								
Professor	113	12.2	77	13.8	27	32.5	217	13.8
Associate Professor	251	27.0	153	27.4	29	35.0	433	27.6
Assistant Professor	350	37.7	265	47.4	20	24.1	635	40.4
Instructor	181	19.5	43	7.7	2	2.4	226	14.4
Rank not specified	33	3.6	21	3.7	5	6.0	59	3.8
Total*	928	100.0	559	100.0	83	100.0	1570	100.0
Past fellows not specifying interest or not interested in FT academic work	410		79		32		521	
Total not in FT academic work	1338		638		115		2091	
Past fellows in FT academic work	663		606		101		1370	
Grand Total	2001		1244		216		3461	

* These totals include all present fellows. They include only those past fellows who are not already in FT academic work, but would consider such positions. Active fellows were not asked whether they would consider FT academic work.

TABLE 56
MINIMUM SALARIES WHICH PAST AND ACTIVE FELLOWS WOULD ACCEPT IN CONNECTION
WITH ACADEMIC APPOINTMENTS, BY DEGREE

MINIMUM SALARY	M.D.		DEGREE Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Past fellows</i>								
<i>Not in FT academic work, but interested</i>								
\$5,000 or less	11	2.2	12	4.5	....	....	23	2.8
5,001- 6,000	26	5.2	32	12.1	1	2.0	59	7.2
6,001- 7,000	7	1.4	54	20.5	1	2.0	62	7.6
7,001- 8,000	40	7.9	63	23.9	6	11.8	109	13.3
8,001-10,000	121	24.0	63	23.9	17	33.3	201	24.6
10,001-12,000	83	16.5	19	7.2	12	23.5	114	13.9
12,001-15,000	103	20.5	12	4.5	6	11.8	121	14.8
15,001-20,000	64	12.7	....	....	4	7.8	68	8.3
More than 20,000	27	5.4	....	....	3	5.8	30	3.7
Salary not specified	21	4.2	9	3.4	1	2.0	31	3.8
Total interested in FT academic work	503	100.0	264	100.0	51	100.0	818	100.0
<i>Did not specify whether interested</i>	252		57		30		339*	
<i>Would not consider FT academic work</i>	158		22		2		182	
Total not in FT academic work	913		343		83		1339	
<i>Past fellows in FT academic work</i>	663		606		101		1370	
Total past fellows	1576		949		184		2709	
<i>Active junior fellows</i>								
\$5,000 or less	34	13.3	42	20.9	....	....	76	16.4
5,001- 6,000	32	12.5	70	34.8	1	14.3	103	22.3
6,001- 7,000	28	11.0	53	26.4	....	....	81	17.5
7,001- 8,000	69	27.1	20	9.9	4	57.1	93	20.1
8,001-10,000	59	23.1	4	2.0	1	14.3	64	13.8
10,001-12,000	12	4.7	1	0.5	....	....	13	2.8
12,001-15,000	6	2.4	....	....	1	14.3	7	1.5
15,001-20,000	....	....	....	....	....	....	....	....
More than 20,000	....	....	....	....	....	....	....	....
Salary not specified	15	5.9	11	5.5	....	....	26	5.6
Total junior fellows	255	100.0	201	100.0	7	100.0	463	100.0

* Of the 339 who did not specify whether they would consider a FT academic position, 65 specified a salary range, and 274 did not.

TABLE 56 (Continued)
 MINIMUM SALARIES WHICH PAST AND ACTIVE FELLOWS WOULD ACCEPT IN CONNECTION
 WITH ACADEMIC APPOINTMENTS, BY DEGREE

MINIMUM SALARY	M.D.		DEGREE		Both		Total	
	N	%	N	%	N	%	N	%
<i>Active senior fellows</i>								
\$5,000 or less	.....	.....	2	2.1	.....	.....	2	0.7
5,001- 6,000	5	2.9	5	5.3	.....	.....	10	3.5
6,001- 7,000	5	2.9	11	11.7	.....	.....	16	5.5
7,001- 8,000	14	8.2	19	20.2	2	8.0	35	12.1
8,001-10,000	45	26.5	34	36.2	9	36.0	88	30.4
10,001-12,000	38	22.4	8	8.5	2	8.0	48	16.6
12,001-15,000	37	21.8	3	3.2	5	20.0	45	15.6
15,001-20,000	10	5.9	.....	.....	2	8.0	12	4.2
More than 20,000	2	1.2	.....	.....	.....	.....	2	0.7
Salary not specified	14	8.2	12	12.8	5	20.0	31	10.7
Total senior fellows	170	100.0	94	100.0	25	100.0	289	100.0
<i>All fellows</i>								
<i>Not in FT academic work</i>								
\$5,000 or less	45	4.9	56	10.0	.....	.....	101	6.4
5,001- 6,000	63	6.8	107	19.1	2	2.4	172	11.0
6,001- 7,000	40	4.3	118	21.1	1	1.2	159	10.1
7,001- 8,000	123	13.3	102	18.3	12	14.5	237	15.1
8,001-10,000	225	24.2	101	18.1	27	32.5	353	22.5
10,001-12,000	133	14.3	28	5.0	14	16.9	175	11.2
12,001-15,000	146	15.7	15	2.7	12	14.5	173	11.0
15,001-20,000	74	8.0	.....	.....	6	7.2	80	5.1
More than 20,000	29	3.1	.....	.....	3	3.6	32	2.0
Salary not specified	50	5.4	32	5.7	6	7.2	88	5.6
Total*	928	100.0	559	100.0	83	100.0	1570	100.0
Past fellows not specifying interest or not interested in FT academic work	410		79		32		521	
Total not in FT academic work	1338		638		115		2091	
Past fellows in FT academic work	663		606		101		1370	
Total fellows	2001		1244		216		3461	

* These totals include all present fellows. They include only those past fellows who are not already in FT academic work, but would consider such positions. Active fellows were not asked whether they would consider FT academic work.

TABLE 57
FACTORS THAT INFLUENCED PAST AND ACTIVE FELLOWS TO DECLINE FULL-TIME
ACADEMIC POSITIONS

FACTORS INFLUENCING FELLOWS TO DECLINE ACADEMIC POSITIONS	Past		Active Junior		Active Senior		Total	
	N	%	N	%	N	%	N	%
Salary	803	50.4	29	33.7	15	50.0	847	49.6
Future potential	898	56.4	51	59.3	13	43.3	962	56.3
Demands:								
Teaching	320	20.1	22	25.6	14	46.7	356	20.8
Administration	265	16.6	11	12.8	8	26.7	284	16.6
Research	113	7.1	6	7.0	4	13.3	123	7.2
Location	736	46.2	25	29.1	11	36.7	772	45.2
Prestige of department or institution	456	28.6	24	27.9	14	46.7	494	28.9
Adequacy of physical facilities	466	29.3	22	25.6	11	36.7	499	29.2
Other factors	356	22.4	35	40.7	11	36.7	402	23.5
Not specified	142	8.9	3	3.5	2	6.7	147	8.6
Number who had refused FT academic posts*	1592	100.0	86	100.0	30	100.0	1708	100.0
Number who had never refused FT academic posts	983		278		21		1282	
Did not answer	134		3		2		139	
Question not applicable†	....		96		236		332	
Total fellows	2709		463		289		3461	

* The totals are smaller than the sum of the individual frequencies because fellows checked as many factors as were applicable.

† Active junior and senior fellows were expected to answer this question only if they had never held academic posts.

TABLE 58
DESIRE OF PAST FELLOWS FOR ADDITIONAL FELLOWSHIP SUPPORT, BY INTEREST
IN FULL-TIME ACADEMIC WORK

INTEREST IN FT ACADEMIC WORK	DESIRE FOR ADDITIONAL FELLOWSHIP SUPPORT							
	Yes		No		Not Specified		Total	
	N	%	N	%	N	%	N	%
<i>Past fellows not in academic work</i>								
Interested	382	46.7	370	45.2	66	8.1	818	100.0
Not interested	32	17.6	143	78.6	7	3.8	182	100.0
Not specified	146	43.1	170	50.1	23	6.8	339	100.0
Total	560	41.8	683	51.0	96	7.2	1339	100.0
<i>Past fellows in academic work</i>	718	52.4	569	41.5	83	6.1	1370	100.0
Total past fellows	1278	47.2	1252	46.2	179	6.6	2709	100.0

TABLE 79
ATTITUDES OF PAST AND ACTIVE FELLOWS TOWARD OBTAINING A SECOND DOCTORATE,
BY DEGREE

ATTITUDE TOWARD SECOND DOCTORATE	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
Would you be in a better position to pursue your career if you held both the M.D. and the Ph.D. degrees?								
Yes	718	35.9	521	41.9	58	26.9	1297	37.5
No	1194	59.7	679	54.6	7	3.2	1880	54.3
Not specified	89	4.4	44	3.5	151	69.9	284	8.2
Total	2001	100.0	1244	100.0	216	100.0	3461	100.0
Would this improve your economic potential?								
Yes	273	13.6	907	72.9	50	23.1	1230	35.5
No	1483	74.1	160	12.9	28	13.0	1671	48.3
Not specified	245	12.3	177	14.2	138	63.9	560	16.2
Total	2001	100.0	1244	100.0	216	100.0	3461	100.0
Would it improve your professional potential?								
Yes	759	37.9	420	33.8	65	30.1	1244	35.9
No	1004	50.2	632	50.8	11	5.1	1647	47.6
Not specified	238	11.9	192	15.4	140	64.8	570	16.5
Total	2001	100.0	1244	100.0	216	100.0	3461	100.0
Would you take advantage of the opportunity?*								
Yes	541	27.0	335	26.9	----	----	876	25.3
No	1313	65.6	848	68.2	----	----	2161	62.4
Not specified	147	7.4	61	4.9	216	100.0	424	12.3
Total	2001	100.0	1244	100.0	216	100.0	3461	100.0

* If it were possible without financial burden for you now to enroll in graduate or medical school and meet in full the requirements for the second degree.

A STUDY OF INTERNS, RESIDENTS, AND CLINICAL TRAINEES

TABLE 60
DEPENDENCY STATUS OF INTERNS, RESIDENTS, AND CLINICAL TRAINEES*

DEPENDENCY STATUS	N	%
Single	901	27.6
Married—no children	726	22.2
Married—1 child	671	20.5
Married—2 children	580	17.7
Married—3 children	263	8.1
Married—4 or more children	115	3.5
Other (divorced, etc.) or not specified	13	0.4
Total	3269	100.0

* All tables in Section IV include the responses of the 889 interns, 2305 residents, and 75 clinical trainees. To avoid repetition, these terms will be omitted from subsequent titles.

TABLE 61
YEAR OF GRADUATION FROM MEDICAL SCHOOL

YEAR OF GRADUATION	N	%
1950 or before	265	8.1
1951	125	3.8
1952	240	7.3
1953	397	12.1
1954	453	13.9
1955	389	11.9
1956	541	16.6
1957	847	25.9
1958	2	0.1
Not specified	10	0.3
Total	3269	100.0

TABLE 62
PRESENT STATUS IN CLINICAL TRAINING

POSITION AND YEAR OF RESIDENCY	N	%
Resident		
First year	834	25.5
Second year	651	19.9
Third year	506	15.5
Fourth year	191	5.8
Fifth year	114	3.5
Year not specified	9	0.3
Total	2305	70.5
Intern	889	27.2
Clinical trainee	75	2.3
Total	3269	100.0

TABLE 63
FIELD OF SPECIALIZATION UNDER RESIDENCY

SERVICE	N	%
General practice	12	0.5
Medicine and specialties:		
Cardiology	5	0.2
Dermatology	37	1.6
Gastroenterology	2	0.1
Internal Medicine	447	19.4
Neurology	27	1.2
Obstetrics and Gynecology	229	9.9
Ophthalmology	73	3.2
Otolaryngology	39	1.7
Pathology	123	5.3
Pediatrics	181	7.9
Physical Medicine	7	0.3
Psychiatry and Neuropsychiatry	149	6.5
Radiology	138	6.0
Surgery and specialties:		
Anesthesiology	88	3.8
Neurosurgery	38	1.6
Orthopedic Surgery	101	4.4
Plastic Surgery	11	0.5
Proctology	2	0.1
Surgery (general)	404	17.5
Thoracic Surgery	14	0.6
Urology	51	2.2
Not specified	127	5.5
Total residents	2305	100.0
Interns and trainees	964	
Total	3269	

TABLE 64
DURATION OF PREVIOUS FELLOWSHIP EXPERIENCE

NUMBER OF YEARS	LEVEL OF FELLOWSHIP					
	Predoctoral		Postdoctoral		Clinical	
	N	%	N	%	N	%
< 1 year	167	5.1	20	0.6	26	0.8
1 year, less than 2	201	6.1	60	1.8	69	2.1
2 years, less than 3	152	4.7	19	0.6	21	0.6
3 years, less than 4	109	3.3	9	0.3	2	0.1
4 years, less than 5	172	5.3	----	----	1	0.0
5 years or more	192	5.9	2	0.1	3	0.1
Duration not specified	16	0.5	14	0.4	15	0.5
Total with fellowship experience	1009	30.9	124	3.8	137	4.2
No fellowship experience	2260	69.1	3145	96.2	3132	95.8
Total	3269	100.0	3269	100.0	3269	100.0

TABLE 65
ENVIRONMENT OF PREVIOUS PREDOCTORAL FELLOWSHIP EXPERIENCE

FELLOWSHIP SERVED IN	N	%
College	325	10.0
Medical school	318	9.7
Graduate school	72	2.2
College and medical school	248	7.6
Other combinations	46	1.4
Total with predoctoral fellowship experience	1009	30.9
No predoctoral fellowship experience	2260	69.1
Total	3269	100.0

TABLE 66
FIELDS IN WHICH PREVIOUS POSTDOCTORAL FELLOWSHIP EXPERIENCE WAS OBTAINED

FIELD	TYPE OF FELLOWSHIP			
	Research		Clinical	
	N	%	N	%
<i>Clinical</i>				
Medicine and specialties	36	29.0	40	29.2
Obstetrics and Gynecology	....	....	3	2.2
Ophthalmology	2	1.6	6	4.4
Otolaryngology	....	....	2	1.5
Pathology	11	8.9	18	13.1
Pediatrics	4	3.2	10	7.3
Physical Medicine and Public Health	1	0.8	1	0.7
Psychiatry and Neurology	5	4.0	6	4.4
Radiology	1	0.8	6	4.4
Surgery and specialties	26	21.0	15	10.9
Total	86	69.3	107	78.1
<i>Preclinical</i>				
Anatomy	3	2.4	2	1.5
Biochemistry	5	4.1	1	0.7
Biophysics	2	1.6	....	....
Epidemiology	2	1.6	1	0.7
Microbiology	1	0.8	....	....
Physiology	15	12.1	3	2.2
Total	28	22.6	7	5.1
Nonmedical scientific	1	0.8	....	....
Not specified	9	7.3	23	16.8
Total with postdoctoral fellowship experience	124	100.0	137	100.0

TABLE 67
DURATION OF RESEARCH EXPERIENCE* AND ENVIRONMENT IN WHICH IT WAS OBTAINED

DURATION	RESEARCH EXPERIENCE OBTAINED AS							
	A medical student		A graduate student		An intern or resident		An employee under a research grant	
	N	%	N	%	N	%	N	%
< 1 year	470	14.4	33	1.0	176	5.4	84	2.6
1 year, less than 2	167	5.1	87	2.7	139	4.3	42	1.3
2 years, less than 3	98	3.0	55	1.7	44	1.3	28	0.9
3 years, less than 4	51	1.6	20	0.6	11	0.3	8	0.2
4 years, less than 5	31	0.9	10	0.3	7	0.2	7	0.2
5 years or more	....	....	2	0.1	1	0.0	3	0.1
Duration not specified	32	1.0	11	0.3	35	1.1	14	0.4
Total reporting research experience	849	26.0	218	6.7	413	12.6	186	5.7
No research experience	2420	74.0	3051	93.3	2856	87.4	3083	94.3
Total	3269	100.0	3269	100.0	3269	100.0	3269	100.0

* There probably is an overlap between the fellowship experience shown in Tables 64-66 and the research experience shown in Table 67. For example, research as a medical or graduate student might have been pursued under the tenure of a predoctoral fellowship. Research done as a resident could have been supported by a clinical fellowship.

TABLE 68
CAREER PREFERENCE* IN 1958 AND AT THE TIME OF GRADUATION FROM MEDICAL SCHOOL
CAREER PREFERENCE IN 1958

CAREER PREFERENCE AT GRADUATION	FT medical school post				Private practice with:								Other† or not specified		Total	
	Salaried		Geographic		PT teaching		PT research		Both		Neither		N		N	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
FT medical school post:																
Salaried	165	77.1	22	10.3	19	8.9	....	....	7	3.3	....	....	1	0.4	214	100.0
Geographic	3	0.7	353	82.5	38	8.9	7	1.6	18	4.2	4	0.9	5	1.2	428	100.0
Private practice with:																
PT teaching	38	2.7	98	7.0	1229	87.7	7	0.5	6	0.4	10	0.7	13	1.0	1401	100.0
PT research	2	1.1	11	6.3	3	1.7	157	89.2	....	....	1	0.6	2	1.1	176	100.0
Both	....	....	5	1.5	....	....	....	....	335	98.2	1	0.3	....	....	341	100.0
Neither	29	5.5	47	8.8	148	27.9	37	7.0	37	7.0	221	41.6	12	2.2	531	100.0
Other†	4	4.8	14	16.7	7	8.3	9	10.7	4	4.7	3	3.6	43	51.2	84	100.0
Not specified	11	11.7	8	8.5	39	41.5	4	4.3	8	8.5	5	5.3	19	20.2	94	100.0
Total	252	7.7	558	17.1	1483	45.4	221	6.7	415	12.7	245	7.5	95	2.9	3269	100.0

* For definition of terms used to describe these preferences, see text, pp. 1424-1425.

† Includes full-time medical school position in a preclinical department, full-time research position, and other choices not listed on the questionnaire.

TABLE 69
NATURE OF RESEARCH INTERESTS, BY CAREER PREFERENCE IN 1958

CAREER PREFERENCE*	INTEREST IN RESEARCH									
	Interested in research in a								Total	
	Clinical science		Preclinical science		Combination of the two		Not interested†			
	N	%	N	%	N	%	N	%		
FT medical school post:										
Salaried	92	36.5	14	5.6	128	50.8	18	7.1	252	100.0
Geographic	281	50.4	14	2.5	206	36.9	57	10.2	558	100.0
Private practice with:										
PT teaching	262	17.7	8	0.5	59	4.0	1154	77.8	1483	100.0
PT research	95	43.0	13	5.9	63	28.5	50	22.6	221	100.0
Both	232	55.9	7	1.7	87	21.0	89	21.4	415	100.0
Neither	13	5.3	2	0.8	----	----	230	93.9	245	100.0
Other	13	18.3	17	24.0	15	21.1	26	36.6	71	100.0
Not specified	7	29.2	1	4.1	7	29.2	9	37.5	24	100.0
Total	995	30.4	76	2.3	565	17.3	1633	50.0	3269	100.0

* In this table, and in all subsequent tables in Appendix IV, the career preferences analyzed will be those expressed by interns and residents at the time they returned the questionnaire (i.e., late in 1957 or early in 1958).

† These individuals did not select any of the three alternatives listed in the preceding columns. It was assumed that they were not interested in devoting a substantial portion of their careers to research. In a few cases, lack of response may signify indecision as to the nature of the respondent's interests.

TABLE 70
BASIS FOR INTEREST IN RESEARCH*

INTEREST IN RESEARCH BASED ON	N†	% of those responding	% of total
His previous experience in research	461	28.1	14.1
Curiosity to investigate problems of special interest	1190	72.6	36.4
Association with a particular faculty or staff member	379	23.1	11.6
Other factors	44	2.7	1.3
Number responding†	1640	100.0	50.2
Number not responding	1629	....	49.8
Total	3269	....	100.0

* This question was directed to persons who said they would like to devote a substantial portion of their careers to research.

† Interns and residents were encouraged to check as many factors as were applicable. The number of people responding therefore was smaller than the sum of their choices.

TABLE 71
BASIS FOR DISINCLINATION TOWARD RESEARCH*

DISINCLINATION TOWARD RESEARCH BASED ON	N†	% of those responding	% of total
Greater interest in some other area	1128	70.9	34.5
His previous experience with research	70	4.4	2.1
Economic problems involved in combining research with other plans	367	23.1	11.2
His assessment of the opportunities in research	87	5.5	2.6
His own observations of the conduct of research projects	93	5.8	2.8
Other factors	74	4.7	2.3
Number responding†	1591	100.0	48.7
Number not responding	1678	....	51.3
Total	3269	....	100.0

* This question was directed to persons who were not inclined toward the inclusion of research in their careers.

† Interns and residents were encouraged to check as many factors as were applicable. The number of people responding therefore was smaller than the sum of their choices.

TABLE 72
BASIS FOR INTEREST IN TEACHING*

INTEREST IN TEACHING BASED ON	N†	% of those responding	% of total
Previous teaching experience	433	17.3	13.2
Desire to participate in the education of physicians	1384	55.2	42.3
Recognition of the contribution of teaching to:			
His research potential	304	12.1	9.3
His clinical ability and insight	1326	52.9	40.6
His prestige in the medical profession	342	13.6	10.5
Other factors	161	6.4	4.9
Number responding†	2506	100.0	76.7
Number not responding	763	....	23.3
Total	3269	....	100.0

* This question was directed to those who would like eventually to devote a substantial portion of their time to teaching in a medical school.

† Interns and residents were encouraged to check as many factors as were applicable. The number of people responding therefore was smaller than the sum of their choices.

TABLE 73
BASIS FOR DISINCLINATION TOWARD TEACHING

DISINCLINATION TOWARD TEACHING BASED ON	N*	% of those responding	% of total
Enroachment by teaching responsibilities on his time	276	49.7	8.4
Dislike for teaching	119	21.4	3.6
Conviction that teaching contributes nothing to his primary career objectives	44	7.9	1.3
Other factors	137	24.7	4.2
Number responding*	555	100.0	17.0
Number not responding	2714	....	83.0
Total	3269	....	100.0

* Interns and residents were encouraged to check as many factors as were applicable. The number of people responding therefore was smaller than the sum of their choices.

TABLE 74
OBSTACLES FORESEEN TO THE PURSUIT OF CHOSEN CAREERS, BY CAREER PREFERENCE

CAREER PREFERENCE	OBSTACLES FORESEEN												Total*	
	Personal economic pressures		Insufficient opportunity for training		Uncertainty concerning available positions		Other obstacles		No obstacles foreseen		Not specified			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
FT medical school post:														
Salaried	109	43.3	15	6.0	91	36.1	25	9.9	67	26.6	1	0.4	252	100.0
Geographic	241	43.2	35	6.3	192	34.4	25	4.5	169	30.3	3	0.5	558	100.0
Private practice with:														
PT teaching	251	16.9	36	2.4	242	16.3	60	4.0	966	65.1	3	0.2	1483	100.0
PT research	45	20.4	7	3.2	37	16.7	12	5.4	130	58.8	....	....	221	100.0
Both	107	25.8	19	4.6	93	22.4	17	4.1	219	52.8	7	1.7	415	100.0
Neither	28	11.4	4	1.6	12	4.9	13	5.3	197	80.4	3	1.2	245	100.0
Other	15	21.1	8	11.3	12	16.9	5	7.0	41	57.7	1	1.4	71	100.0
Not specified	6	25.0	1	4.2	5	20.8	2	8.3	13	54.2	3	12.5	24	100.0
Total	802	24.5	125	3.8	684	20.9	159	4.9	1802	55.1	21	0.6	3269	100.0

* The numbers in this column represent the number of people indicating each career preference. They were free to check more than one obstacle, and multiple responses are included in the first four columns.

TABLE 75
SUMMARY OF FIELDS OF CONCENTRATION OF INTERNS AND RESIDENTS AT SUCCESSIVE
STAGES IN THEIR CAREERS

FIELD OR DEPARTMENT	Residency training		Proposed specialty board certification		Proposed department for academic careers	
	N	%*	N	%	N	%
<i>Clinical fields</i>						
General practice	12	0.4	....	....	....	....
Medicine and specialties:						
Dermatology	37	1.1	50	1.5	4	0.1
Internal Medicine†	454	13.9	682	20.9	221	6.8
Obstetrics and Gynecology	229	7.0	309	9.4	33	1.0
Ophthalmology	73	2.2	113	3.5	14	0.5
Otolaryngology	39	1.2	50	1.5	3	0.1
Pathology	123	3.8	149	4.6	63	1.9
Pediatrics	181	5.5	285	8.7	81	2.5
Physical Medicine	7	0.2	11	0.3	4	0.1
Preventive Medicine	....	....	1	0.0	....	....
Psychiatry and Neurology	176	5.4	268	8.2	85‡	2.6
Radiology	138	4.2	164	5.0	33	1.0
Surgery and specialties:						
Anesthesiology	88	2.7	98	3.0	17	0.5
Neurosurgery	38	1.2	61	1.9	24	0.7
Orthopedic Surgery	101	3.1	156	4.8	22	0.7
Plastic Surgery	11	0.3	28	0.9	3	0.1
Proctology	2	0.1	2	0.1	....	....
Surgery (general)	404	12.3	458	14.0	118	3.6
Thoracic Surgery	14	0.4	65	2.0	9	0.3
Urology	51	1.6	82	2.5	15	0.5
<i>Preclinical fields</i>	....	....	....	....	11	0.3
Nonscientific fields	....	....	....	....	1	0.0
Not specified	127	3.9	132	4.0	106	3.2
Not applicable	964	29.5	105	3.2	2402	73.5
Total	3269	100.0	3269	100.0	3269	100.0

* The percentages shown in this column differ from those given in Table 63 because these figures are expressed as per cent of the total group (rather than as per cent of residents as in Table 63).

† Includes cardiology and gastroenterology.

‡ 22 would serve in neurology departments; 63 in departments of psychiatry.

TABLE 76
FIELDS OF PROPOSED SPECIALTY BOARD CERTIFICATION, BY CAREER PREFERENCE
CAREER PREFERENCE

PROPOSED SPECIALTY BOARD	FT medical school post				Private practice with:										Other or not specified		Total	
	Salaried		Geographic		PT teaching		PT research		Both		Neither							
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Anesthesiology	11	11.2	6	6.1	32	32.7	15	15.3	12	12.2	19	19.4	3	3.1	98	100.0		
Medicine and specialties	79	10.8	165	22.5	304	41.5	40	5.5	95	12.9	30	4.1	20	2.7	733	100.0		
Physical Medicine	2	18.2	3	27.3	5	45.4	1	9.1	....	....	....	....	....	....	11	100.0
Obstetrics and Gynecology	6	1.9	26	8.4	193	62.5	13	4.2	37	12.0	31	10.0	3	1.0	309	100.0		
Ophthalmology	1	0.9	14	12.4	71	62.8	9	8.0	9	7.9	8	7.1	1	0.9	113	100.0		
Otolaryngology	1	2.0	2	4.0	27	54.0	5	10.0	7	14.0	7	14.0	1	2.0	50	100.0		
Pathology	35	23.5	21	14.1	39	26.2	16	10.7	14	9.4	6	4.0	18	12.1	149	100.0		
Pediatrics	33	11.6	56	19.6	134	47.0	12	4.2	24	8.4	19	6.7	7	2.5	285	100.0		
Psychiatry and Neurology	22	8.2	63	23.5	101	37.7	13	4.9	51	19.0	11	4.1	7	2.6	268	100.0		
Radiology	14	8.5	21	12.8	78	47.6	12	7.3	16	9.8	19	11.6	4	2.4	164	100.0		
Surgery and specialties	34	4.0	166	19.5	410	48.1	57	6.7	132	15.5	37	4.3	16	1.9	852	100.0		
Not specified	10	7.6	13	9.8	52	39.4	16	12.1	18	13.6	15	11.4	8	6.1	132	100.0		
Not applicable*	4	3.8	2	1.9	37	35.2	12	11.4	....	....	43	41.0	7	6.7	105	100.0
Total	252	7.7	558	17.1	1483	45.4	221	6.7	415	12.7	245	7.5	95	2.9	3269	100.0		

*Do not expect to seek specialty board certification.

*Do not expect to seek specialty board certification.

TABLE 77
FIELDS OF PROPOSED SPECIALTY BOARD CERTIFICATION, BY INTEREST IN RESEARCH

PROPOSED SPECIALTY BOARD	INTEREST IN RESEARCH									
	Interested in research in a						Not interested*		Total	
	Clinical science N	%	Preclinical science N	%	Combination of the two N	%	N	%	N	%
Anesthesiology	24	24.5	2	2.0	13	13.3	59	60.2	98	100.0
Medicine and specialties	269	36.7	12	1.7	141	19.2	311	42.4	733	100.0
Physical Medicine	2	18.2	....	....	2	18.2	7	63.6	11	100.0
Obstetrics and Gynecology	79	25.6	3	1.0	27	8.7	200	64.7	309	100.0
Ophthalmology	24	21.2	....	....	16	14.2	73	64.6	113	100.0
Otolaryngology	9	18.0	....	....	6	12.0	35	70.0	50	100.0
Pathology	10	6.7	40	26.8	56	37.6	43	28.9	149	100.0
Pediatrics	91	31.9	3	1.1	49	17.2	142	49.8	285	100.0
Psychiatry and Neurology	96	35.8	1	0.4	56	20.9	115	42.9	268	100.0
Radiology	55	33.5	1	0.6	19	11.6	89	54.3	164	100.0
Surgery and specialties	284	33.3	9	1.1	144	16.9	415	48.7	852	100.0
Not specified	38	28.8	2	1.5	27	20.5	65	49.2	132	100.0
Not applicable†	14	13.3	3	2.9	9	8.6	79	75.2	105	100.0
Total	995	30.4	76	2.3	565	17.3	1633	50.0	3269	100.0

* These individuals did not select any of the three alternatives listed in the preceding columns. It was assumed that they were not interested in devoting a substantial portion of their careers to research. In a few cases, lack of response may signify indecision as to the nature of the respondent's interests.

† Do not plan to seek specialty board certification.

TABLE 78
FIELDS OF PROPOSED SPECIALTY BOARD CERTIFICATION, BY INTEREST IN TEACHING*

PROPOSED SPECIALTY BOARD	INTEREST IN TEACHING					
	Interested		Not interested		Total	
	N	%	N	%	N	%
Anesthesiology	58	59.2	40	40.8	98	100.0
Medicine and specialties	615	83.9	118	16.1	733	100.0
Physical Medicine	8	72.7	3	27.3	11	100.0
Obstetrics and Gynecology	222	71.8	87	28.2	309	100.0
Ophthalmology	72	63.7	41	36.3	113	100.0
Otolaryngology	34	68.0	16	32.0	50	100.0
Pathology	111	74.5	38	25.5	149	100.0
Pediatrics	238	83.5	47	16.5	285	100.0
Psychiatry and Neurology	215	80.2	53	19.8	268	100.0
Radiology	112	68.3	52	31.7	164	100.0
Surgery and specialties	681	79.9	171	20.1	852	100.0
Not specified	94	71.2	38	28.8	132	100.0
Not applicable†	46	43.8	59	56.2	105	100.0
Total	2506	76.7	763	23.3	3269	100.0

* As indicated by response to question analyzed in Table 72.

† Do not plan to seek specialty board certification.

TABLE 79
RELATIONSHIP OF MARITAL STATUS TO CAREER PREFERENCE
CAREER PREFERENCE

MARITAL STATUS	FT medical school post				Private practice with:										Other or not specified		Total
	Salaried		Geographic		PT teaching		PT research		Both		Neither						
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Single	73	8.1	163	18.1	410	45.5	56	6.2	102	11.3	63	7.0	34	3.8	901	100.0	
Married (no children)	63	8.7	130	17.9	312	43.0	54	7.4	99	13.6	49	6.8	19	2.6	726	100.0	
Married (1+ children)	115	7.1	261	16.0	755	46.3	111	6.8	213	13.1	133	8.2	41	2.5	1629	100.0	
Not specified	1	7.7	4	30.8	6	46.1	....	....	1	7.7	....	....	1	7.7	13	100.0
Total	252	7.7	558	17.1	1483	45.4	221	6.7	415	12.7	245	7.5	95	2.9	3209	100.0	

TABLE 80
COMPARISON OF CAREER PREFERENCES OF MEN AND WOMEN
CAREER PREFERENCE

SEX	PT medical school post				Private practice with:								Other or not specified		Total	
	Salaried		Geographic		PT teaching		PT research		Both		Neither					
	N	%	N	%	N	%	N	%	N	%	N	%	N	%		N
Male	204	6.9	504	17.1	1363	46.2	199	6.8	376	12.7	222	7.5	83	2.8	2951	100.0
Female	40	18.3	36	16.5	73	33.5	17	7.8	23	10.6	19	8.7	10	4.6	218	100.0
Not specified	8	8.0	18	18.0	47	47.0	5	5.0	16	16.0	4	4.0	2	2.0	100	100.0
Total	252	7.7	558	17.1	1483	45.4	221	6.7	415	12.7	245	7.5	95	2.9	3269	100.0

TABLE 81
RELATIONSHIP OF CURRENT POSITION (I.E., STATUS IN CLINICAL TRAINING)
TO CAREER PREFERENCE

CAREER PREFERENCE	Intern		Resident		POSITION		Clinical trainee		Total	
	N	%	N	%	N	%	N	%	N	%
FT medical school post:										
Salaried	56	6.3	186	8.1	10	13.3			252	7.7
Geographic	137	15.4	396	17.2	25	33.3			558	17.1
Private practice with:										
PT teaching	406	45.7	1062	46.1	15	20.0			1483	45.4
PT research	72	8.1	142	6.1	7	9.3			221	6.7
Both	109	12.3	295	12.8	11	14.7			415	12.7
Neither	80	9.0	163	7.1	2	2.7			245	7.5
Other	19	2.1	49	2.1	3	4.0			71	2.2
Not specified	10	1.1	12	0.5	2	2.7			24	0.7
Total	889	100.0	2305	100.0	75	100.0			3269	100.0

TABLE 82
NATURE OF MEDICAL SCHOOL AFFILIATION OF HOSPITAL IN WHICH CLINICAL TRAINING
WAS OBTAINED, BY CAREER PREFERENCE

CAREER PREFERENCE	Privately supported		Tax supported		Multiple affiliation		Loose affiliation or none		Total	
	N	%	N	%	N	%	N	%	N	%
FT medical school post:										
Salaried	148	9.1	80	7.3	6	2.6	18	5.8	252	7.7
Geographic	331	20.3	173	15.8	23	9.9	31	10.0	558	17.1
Private practice with:										
PT teaching	713	43.8	499	45.5	122	52.6	149	47.9	1483	45.4
PT research	86	5.3	78	7.1	20	8.6	37	11.9	221	6.7
Both	227	13.9	125	11.4	26	11.2	37	11.9	415	12.7
Neither	85	5.2	100	9.1	29	12.5	31	10.0	245	7.5
Other	29	1.8	31	2.8	5	2.2	6	1.9	71	2.2
Not specified	10	0.6	11	1.0	1	0.4	2	0.6	24	0.7
Total	1629	100.0	1097	100.0	232	100.0	311	100.0	3269	100.0

TABLE 84
RELATIONSHIP BETWEEN CAREER PREFERENCE AND WILLINGNESS TO MEET
THE REQUIREMENTS FOR THE PH.D. DEGREE IN A PRECLINICAL SCIENCE*

CAREER PREFERENCE	ATTITUDE TOWARD Ph.D. TRAINING							
	Willing to meet requirements*		Regard training as unnecessary		Neither or not specified		Total	
	N	%	N	%	N	%	N	%
FT medical school post:								
Salaried	121	48.0	30	11.9	101	40.1	252	100.0
Geographic	217	38.9	101	18.1	240	43.0	558	100.0
Private practice with:								
PT teaching	209	14.1	542	36.5	732	49.4	1483	100.0
PT research	72	32.6	34	15.4	115	52.0	221	100.0
Both	82	19.7	119	28.7	214	51.6	415	100.0
Neither	24	9.8	101	41.2	120	49.0	245	100.0
Other	28	39.4	20	28.2	23	32.4	71	100.0
Not specified	5	20.8	7	29.2	12	50.0	24	100.0
Total	758	23.2	954	29.2	1557	47.6	3269	100.0

* Should it become possible without financial burden.

TABLE 85
RELATIONSHIP BETWEEN INTEREST IN RESEARCH AND TEACHING AND WILLINGNESS
TO MEET THE REQUIREMENTS FOR THE PH.D. DEGREE IN A PRECLINICAL SCIENCE*

INTEREST IN RESEARCH AND TEACHING	ATTITUDE TOWARD Ph.D. TRAINING							
	Willing to meet requirements*		Not willing to meet requirements		Not specified		Total	
	N	%	N	%	N	%	N	%
<i>Interested in research in:</i>								
A clinical science	266	26.7	654	65.7	75	7.6	995	100.0
A preclinical science	36	47.4	32	42.1	8	10.5	76	100.0
Combination of above	252	44.6	265	46.9	48	8.5	565	100.0
Total interested in research	554	33.9	951	58.1	131	8.0	1636	100.0
Not interested in research	204	12.5	1316	80.6	113	6.9	1633	100.0
Total	758	23.2	2267	69.3	244	7.5	3269	100.0
<i>Interested in medical school teaching</i>	627	25.0	1703	68.0	176	7.0	2506	100.0
<i>Not interested in medical school teaching†</i>	131	17.2	564	73.9	68	8.9	763	100.0
Total	758	23.2	2267	69.3	244	7.5	3269	100.0

* Should it become possible without financial burden.

† The question analyzed here (II-f) was worded: "If you would like, eventually, to devote a substantial portion of your time to teaching in a medical school, is this the result of (1) previous teaching experience, (2) a desire to participate in the education of physicians, or (3) a recognition of the contribution of teaching to your research potential, your clinical ability and insight, or your prestige in the medical profession?" Lack of response to any of the alternatives was interpreted as lack of interest in teaching.

TABLE 86
RELATIONSHIP BETWEEN RESEARCH EXPERIENCE AND WILLINGNESS TO MEET
REQUIREMENTS FOR THE PH.D. DEGREE IN A PRECLINICAL SCIENCE*

RESEARCH EXPERIENCE (Environment and duration)	ATTITUDE TOWARD PH.D. TRAINING							
	Willing to meet requirements*		Not willing to meet requirements		Not specified		Total	
	N	%	N	%	N	%	N	%
<i>At any point in previous career</i>								
Some experience	403	28.5	897	63.6	111	7.9	1411	100.0
No experience	355	19.1	1370	73.7	133	7.2	1858	100.0
Total	758	23.2	2267	69.3	244	7.5	3269	100.0
<i>As a medical student</i>								
< 1 year	119	25.3	320	68.1	31	6.6	470	100.0
1 year	51	30.5	106	63.5	10	6.0	167	100.0
2 years or more	77	42.8	82	45.5	21	11.7	180	100.0
Duration not specified	12	37.5	16	50.0	4	12.5	32	100.0
Total with experience as as medical student	259	30.5	524	61.7	66	7.8	849	100.0
No such experience	499	20.6	1743	72.0	178	7.4	2420	100.0
Total	758	23.2	2267	69.3	244	7.5	3269	100.0
<i>As an intern or resident</i>								
< 1 year	43	24.4	124	70.5	9	5.1	176	100.0
1 year	41	29.5	89	64.0	9	6.5	139	100.0
2 years or more	27	42.9	28	44.4	8	12.7	63	100.0
Duration not specified	11	31.4	17	48.6	7	20.0	35	100.0
Total with experience as intern or resident	122	29.5	258	62.5	33	8.0	413	100.0
No such experience	636	22.3	2009	70.3	211	7.4	2856	100.0
Total	758	23.2	2267	69.3	244	7.5	3269	100.0
<i>As a postdoctoral research fellow</i>								
< 1 year	6	30.0	13	65.0	1	5.0	20	100.0
1 year	20	33.3	33	55.0	7	11.7	60	100.0
2 years or more	12	40.0	15	50.0	3	10.0	30	100.0
Duration not specified	3	21.4	8	57.2	3	21.4	14	100.0
Total with experience as postdoctoral fellow	41	33.1	69	55.6	14	11.3	124	100.0
No such experience	717	22.8	2198	69.9	230	7.3	3145	100.0
Total	758	23.2	2267	69.3	244	7.5	3269	100.0

* Should it become possible without financial burden.

TABLE 87
INTEREST IN ACADEMIC COURSE WORK AS AN ALTERNATIVE TO ENROLLING TOWARD THE
PH.D. DEGREE, BY CAREER PREFERENCE

CAREER PREFERENCE	INTEREST IN COURSE WORK AS ALTERNATIVE TO PH.D.									
	Interested in course work in								Not interested	
	Biological sciences		Chemistry, biochemistry		Mathematics, physics		Clinical, other		Total*	
	N	%	N	%	N	%	N	%	N	%
FT medical school post:										
Salaried	26	32.1	35	43.2	16	19.8	20	24.7	81	100.0
Geographic	107	53.0	69	34.2	32	15.8	52	25.7	202	100.0
Private practice with:										
PT teaching	154	38.3	63	15.7	38	9.5	203	50.5	402	100.0
PT research	32	45.1	19	26.8	11	15.5	22	31.0	71	100.0
Both	69	40.6	38	22.4	19	11.2	75	44.1	170	100.0
Neither	15	37.5	4	10.0	4	10.0	23	57.5	40	100.0
Other	9	42.9	8	38.1	6	28.6	4	19.0	21	100.0
Not specified	4	50.0	1	12.5	1	12.5	4	50.0	8	100.0
Total	416	41.8	237	23.8	127	12.8	403	40.5	995	100.0
									758	1516
									5	11
									24	24
									71	71
									22	22
									24	24
									181	181
									24	24
									82	82
									78	78
									209	209
									872	872
									1483	1483
									221	221
									415	415
									163	163
									245	245
									24	24
									28	28
									758	758
									1516	1516
									24	24
									3269	3269

* Multiple selections of course areas included in previous columns but not in this total.

† Contrary to the instructions, some individuals answered the question about course work, even though they already had indicated an interest in the Ph.D. degree. These people are included in the Ph.D. column, but not in the analysis of course work desired.

§ Interested in neither Ph.D. nor course work, or not specified.

TABLE 88
INTEREST IN ADDITIONAL RESEARCH EXPERIENCE, AND PREFERRED MEANS OF OBTAINING
SUCH EXPERIENCE, BY CAREER PREFERENCE

CAREER PREFERENCE	DESIRE FOR MORE RESEARCH EXPERIENCE										Total N		
	Desire more experience through:												
	PT research during residency		FT research for short term*		Clinical traineeship		Research fellowship		Total†			Not Interested in more experience N	
N	%	N	%	N	%	N	%	N	%	N	N		
FT medical school post:													
Salaried	65	29.8	75	34.4	49	22.5	72	33.0	218	100.0	30	4	252
Geographic	159	33.3	180	37.7	122	25.6	117	24.5	477	100.0	77	4	558
Private practice with:													
PT teaching	352	42.4	344	41.4	155	18.7	47	5.7	891	100.0	647	5	1483
PT research	81	42.9	69	36.5	30	15.9	26	13.8	189	100.0	32	....	221
Both	174	49.9	142	40.7	71	20.3	43	12.3	349	100.0	62	4	415
Neither	32	38.1	43	51.2	9	10.7	5	6.0	84	100.0	158	3	245
Other	20	39.2	18	35.3	13	25.5	16	31.4	51	100.0	20	....	71
Not specified	3	14.3	10	47.6	9	42.9	3	14.3	21	100.0	2	1	24
Total	886	39.9	881	39.7	458	20.6	329	14.8	2220	100.0	1028	21	3269

* During periodic freedom from responsibilities as a resident.

† This column shows the number of people desiring more research experience. They were free to check more than one mechanism for obtaining this experience, and multiple selections are included in previous columns.

TABLE 89
DESIRES FOR ADDITIONAL TEACHING EXPERIENCE, AND PREFERRED MEANS OF OBTAINING
SUCH EXPERIENCE, BY CAREER PREFERENCE

CAREER PREFERENCE	DESIRE FOR MORE TEACHING EXPERIENCE										Total N		
	Desire more experience through:											Desire no more experience N	Not specified N
	Fellowship		On-the-job training		Other means		Plan not specified		Total*				
	N	%	N	%	N	%	N	%	N	%	N	%	
FT medical school post:													
Salaried	112	57.4	84	43.1	2	1.0	6	3.1	195	100.0	52		252
Geographic	233	53.9	203	47.0	13	3.0	11	2.5	432	100.0	121		558
Private practice with:													
PT teaching	351	38.5	547	60.0	22	2.4	51	5.6	911	100.0	534		1483
PT research	32	48.5	32	48.5	3	4.5	7	10.6	66	100.0	148		221
Both	132	46.3	149	52.3	12	4.2	10	3.5	285	100.0	123		415
Neither	11	22.9	35	72.9	1	2.1	8	16.7	48	100.0	190		245
Other	15	44.1	17	50.0	2	5.9	4	11.8	34	100.0	33		71
Not specified	5	31.2	9	56.2	.....	.....	4	25.0	16	100.0	6		24
Total	891	44.8	1076	54.2	55	2.8	101	5.1	1987	100.0	1207		3269
													75

* This column shows the number of people desiring more teaching experience. They were free to check more than one mechanism for obtaining this experience, and multiple selections are included in previous columns.

TABLE 90
REACTION TO CERTAIN CHARACTERISTICS OF EXISTING RESEARCH FELLOWSHIPS

CHARACTERISTICS OF RESEARCH FELLOWSHIPS	REACTION							
	Favorable		Unfavorable		Not specified		Total	
	N	%	N	%	N	%	N	%
Concentration in specialized areas	1932	59.1	589	18.0	748	22.9	3269	100.0
Level of stipends	762	23.3	1632	49.9	875	26.8	3269	100.0
Fellowship regulations excluding opportunity to maintain clinical proficiency	380	11.6	2147	65.7	742	22.7	3269	100.0
Regulations excluding teaching	492	15.0	1980	60.6	797	24.4	3269	100.0
Time involved in completing a fellowship appointment	964	29.5	1291	39.5	1014	31.0	3269	100.0

TABLE 91
REACTION TO CERTAIN CHARACTERISTICS OF EXISTING CLINICAL TRAINEESHIPS

CHARACTERISTICS OF CLINICAL TRAINEESHIPS	REACTION							
	Favorable		Unfavorable		Not specified		Total	
	N	%	N	%	N	%	N	%
Concentration in specialized areas	2002	61.2	555	17.0	712	21.8	3269	100.0
Level of stipends	710	21.7	1738	53.2	821	25.1	3269	100.0
Opportunity for concentrated research experience in a clinical science	1967	60.2	435	13.3	867	26.5	3269	100.0

TABLE 92
EFFECT OF THE PRESENCE OF TRAINEES OR FELLOWS ON THE CHARACTER OF THE
INTERNSHIP OR RESIDENCY

NATURE OF EFFECTS	Effect indicated		No effect indicated		Total	
	N	%	N	%	N	%
<i>General:</i>						
Beneficial	1466	44.8				
Detrimental	114	3.5				
Mixed	28	0.9				
Not specified	58	1.8				
Total	1666	51.0	1603	49.0	3269	100.0
<i>Clinical teaching material:</i>						
Reduced its availability	136	4.2				
Improved its use	1412	43.2				
Total	1548	47.4	1721	52.6	3269	100.0
<i>Responsibilities:</i>						
Reduced those he would prefer to have assumed	321	9.8				
Increased them	604	18.5				
Total	925	28.3	2344	71.7	3269	100.0
<i>Subspecialty training opportunities:</i>						
Decreased these opportunities	241	7.4				
Improved them	935	28.6				
Total	1176	36.0	2093	64.0	3269	100.0

A STUDY OF THE FULL-TIME MEDICAL SCHOOL FACULTY MEMBER

1957-1958

TABLE 93
DOCTORATES HELD BY FACULTY MEMBERS IN CLINICAL AND PRECLINICAL
DEPARTMENTS, BY SEX

SEX	DEGREE*							
	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Male	897	95.8	46	70.8	66	98.5	1009	94.5
Female	34	3.6	17	26.1	1	1.5	52	4.9
Not specified	5	0.6	2	3.1	----	----	7	0.6
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
Male	275	96.2	1152	90.4	154	93.3	1581	91.7
Female	9	3.1	115	9.0	11	6.7	135	7.8
Not specified	2	0.7	7	0.6	----	----	9	0.5
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

* There is no duplication among these three degree categories. The M.D. category includes those who held the M.D. only. The Ph.D. category includes those who held the Ph.D. only, the Sc.D. only, or the Ph.D. in combination with the Sc.D. The "both" category includes those who held the M.D. in combination with the Ph.D. or the Sc.D. degree. Unless otherwise indicated, this grouping will be used in all tables in Section V involving a breakdown by degree.

TABLE 94
DATES OF FIRST DOCTORATES EARNED BY FACULTY MEMBERS IN CLINICAL AND
PRECLINICAL DEPARTMENTS, BY DEGREE

DATE OF DEGREE	DEGREE							
	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
1954-1958	2	0.2	15	23.1	----	----	17	1.6
1949-1953	161	17.2	23	35.4	2	3.0	186	17.4
1944-1948	322	34.4	7	10.8	20	29.8	349	32.7
1939-1943	199	21.3	5	7.7	17	25.4	221	20.7
1934-1938	106	11.3	7	10.8	13	19.4	126	11.8
1933 or before	141	15.1	6	9.2	15	22.4	162	15.2
Not specified	5	0.5	2	3.0	----	----	7	0.6
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
1954-1958	4	1.4	305	23.9	3	1.8	312	18.1
1949-1953	55	19.2	382	30.0	16	9.7	453	26.3
1944-1948	69	24.1	130	10.2	34	20.6	233	13.5
1939-1943	63	22.0	162	12.7	38	23.0	263	15.2
1934-1938	20	7.0	116	9.1	30	18.2	166	9.6
1933 or before	68	23.8	172	13.5	43	26.1	283	16.4
Not specified	7	2.5	7	0.6	1	0.6	15	0.9
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

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TABLE 95
 FIELDS IN WHICH FACULTY MEMBERS IN CLINICAL AND PRECLINICAL DEPARTMENTS
 EARNED THE PH.D. DEGREE

FIELD	Clinical		DEPARTMENT Preclinical		Total	
	N	%	N	%	N	%
All clinical fields	26	19.7	5	0.3	31	2.0
Preclinical fields						
Anatomy	9	6.8	200	13.9	209	13.3
Biochemistry	49	37.1	439	30.5	488	31.1
Biology*	6	4.5	196	13.6	202	12.8
Biophysics	3	2.3	18	1.3	21	1.3
Mathematics	....	....	1	0.1	1	0.1
Microbiology	11	8.3	199	13.8	210	13.4
Pharmacology	3	2.3	96	6.7	99	6.3
Physiology	16	12.1	262	18.2	278	17.7
Psychology	1	0.8	4	0.3	5	0.3
Medical sciences	3	2.3	7	0.5	10	0.6
Nonmedical scientific	....	....	9	0.6	9	0.6
Nonscientific	1	0.8	....	....	1	0.1
Field not specified	4	3.0	3	0.2	7	0.4
Total holding Ph.D.	132	100.0	1439	100.0	1571	100.0
Not applicable (M.D. only)	936		286		1222	
Total	1068		1725		2793	

* Includes zoology and genetics.

TABLE 96
BACKGROUND OF CLINICAL TRAINING OF FACULTY MEMBERS HOLDING THE M.D. DEGREE

CLINICAL TRAINING	DEPARTMENT					Precinical	
	Clinical					M.D. and Ph.D.	
	M.D.	N	%	Total	%	N	%
<i>Have you served an internship?</i>							
Yes	931	64	95.5	995	99.2	246	86.0
No	4	3	4.5	7	0.7	37	12.9
Not specified	1	....	....	1	0.1	3	1.1
Total holding M.D.	936	67	100.0	1003	100.0	286	100.0
<i>Have you served a residency?</i>							
Yes	900	56	83.6	956	95.3	141	49.3
No	34	11	16.4	45	4.5	142	49.7
Not specified	2	....	....	2	0.2	3	1.0
Total holding M.D.	936	67	100.0	1003	100.0	286	100.0
<i>For how many years?</i>							
< 1 year	....	1	1.5	1	0.1	1	0.4
1 year	51	1	1.5	52	5.2	29	10.1
2 years	140	12	17.9	152	15.2	41	14.3
3 years	301	13	19.4	314	31.3	36	12.6
4 years	168	8	11.9	176	17.5	17	5.9
5 years or more	230	20	29.9	250	24.9	15	5.2
Not specified	12	1	1.5	13	1.3	5	1.8
Not applicable*	34	11	16.4	45	4.5	142	49.7
Total holding M.D.	936	67	100.0	1003	100.0	286	100.0
<i>Are you a Diplomate of an American Specialty Board?</i>							
Yes	724	50	74.6	774	77.2	55	19.2
No	206	17	25.4	223	22.2	230	80.4
Not specified	6	....	....	6	0.6	1	0.4
Total holding M.D.	936	67	100.0	1003	100.0	286	100.0

* Did not serve a residency.

TABLE 97
RANKS HELD BY FACULTY MEMBERS IN CLINICAL AND PRECLINICAL DEPARTMENTS,
BY DEGREE

FACULTY RANK	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Chairman and Professor	110	11.8	1	1.5	8	11.9	119	11.1
Professor	146	15.6	3	4.6	26	38.8	175	16.4
Associate Professor	256	27.3	13	20.0	20	29.9	289	27.1
Assistant Professor	292	31.2	21	32.3	12	17.9	325	30.4
Instructor, etc.*	132	14.1	27	41.6	1	1.5	160	15.0
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
Chairman and Professor	82	28.7	166	13.0	55	33.3	303	17.6
Professor	29	10.1	178	14.0	34	20.6	241	14.0
Associate Professor	73	25.5	327	25.7	39	23.6	439	25.4
Assistant Professor	68	23.8	420	32.9	25	15.2	513	29.7
Instructor, etc.*	34	11.9	183	14.4	12	7.3	229	13.3
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

* Includes lecturers, associates, and assistants.

TABLE 98
DEPARTMENTS IN WHICH FACULTY MEMBERS HELD POSITIONS IN 1958, BY DEGREE

DEPARTMENT	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Clinical</i>								
Medicine	598	48.9	43	3.2	35	15.1	676	24.2
Surgery	330	27.0	13	1.0	32	13.8	375	13.4
Other clinical departments	29	2.4	5	0.4	2	0.9	36	1.3
Total*	957	78.3	61	4.6	69	29.8	1087	38.9
<i>Preclinical</i>								
Anatomy	69	5.7	341	25.5	41	17.7	451	16.1
Biochemistry	9	0.7	356	26.6	19	8.2	384	13.8
Microbiology	56	4.6	212	15.8	17	7.3	285	10.2
Pharmacology	67	5.5	137	10.2	44	18.9	248	8.9
Physiology	64	5.2	231	17.2	41	17.7	336	12.0
Total*	265	21.7	1277	95.3	162	69.8	1704	61.0
Nonmedical scientific	....	....	1	0.1	....	....	1	0.1
Not specified	....	....	....	....	1	0.4	1	0.1
Grand Total	1222	100.0	1339	100.0	232	100.0	2793	100.0

* The totals given for clinical and preclinical departments are inconsistent with those shown in other tabulations in this section. This reflects the migration that took place between the issuance of the first and second questionnaires. Table 98 shows the departments in which faculty members were located in 1958. In the other analyses of data from the faculty questionnaires, the departmental breakdown (clinical versus preclinical) is based upon the departments in which the respondents held positions at the time of the initial questionnaire in 1957.

TABLE 99
TYPE OF APPOINTMENT HELD BY FACULTY MEMBERS, BY DEGREE

TYPE OF APPOINTMENT	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
FT salaried	516	55.1	47	72.3	34	50.7	597	55.9
Geographic FT with:								
Some salary	334	35.7	2	3.1	28	41.8	364	34.1
No salary	26	2.8	9	13.8	3	4.5	38	3.6
Part time with:								
Some salary	30	3.2	2	3.1	1	1.5	33	3.1
No salary	23	2.5	2	3.1	----	----	25	2.3
Not specified	7	0.7	3	4.6	1	1.5	11	1.0
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
FT salaried	249	87.1	1185	93.1	150	90.9	1584	91.9
Geographic FT with:								
Some salary	12	4.2	23	1.8	7	4.3	42	2.4
No salary	8	2.8	31	2.4	2	1.2	41	2.4
Part time with:								
Some salary	9	3.1	18	1.4	4	2.4	31	1.8
No salary	7	2.4	10	0.8	1	0.6	18	1.0
Not specified	1	0.4	7	0.5	1	0.6	9	0.5
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

TABLE 100
PRIMARY OR SOLE SOURCE OF SALARY REPORTED BY FACULTY MEMBERS, BY DEGREE

SOURCE OF SALARY	M.D.		DEGREE				Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Regular budget	660	70.5	21	32.3	47	70.1	728	68.2
Grants	104	11.1	30	46.2	4	6.0	138	12.9
Fellowships	45	4.8	5	7.7	5	7.5	55	5.1
Other*	86	9.2	4	6.1	8	11.9	98	9.2
Not specified	41	4.4	5	7.7	3	4.5	49	4.6
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
Regular budget	217	75.9	1063	83.4	142	86.1	1422	82.4
Grants	35	12.2	112	8.8	10	6.1	157	9.1
Fellowships	15	5.2	51	4.0	7	4.2	73	4.2
Other*	11	3.9	26	2.1	2	1.2	39	2.3
Not specified	8	2.8	22	1.7	4	2.4	34	2.0
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

* This category includes cases where equal contributions were made by two of the sources listed above.

TABLE 101

EXTENT TO WHICH FACULTY MEMBERS HOLDING THE M.D. DEGREE ENGAGED IN PRIVATE PRACTICE TO SUPPLEMENT THEIR INCOMES

STATUS WITH RESPECT TO PRACTICE	DEPARTMENT			
	Clinical		Preclinical	
	N	%	N	%
In practice, providing:				
Major source of income	263	26.2	19	4.2
Secondary source of income	330	32.9	42	9.3
Contribution not specified	10	1.0	1	0.2
Total in practice	603	60.1	62	13.7
Not in practice	385	38.4	382	84.7
Not specified whether in practice	15	1.5	7	1.6
Total holding M.D. degree	1003	100.0	451	100.0

TABLE 102

STATUS OF FACULTY MEMBERS WITH RESPECT TO ACADEMIC TENURE, BY DEGREE

TENURE STATUS	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Does not have tenure:								
But appealing*	222	23.7	34	52.3	11	16.4	267	25.0
Not appealing	123	13.2	11	16.9	9	13.4	143	13.4
Not specified	32	3.4	3	4.6	1	1.5	36	3.4
Total without tenure	377	40.3	48	73.8	21	31.3	446	41.8
Has tenure	541	57.8	15	23.1	45	67.2	601	56.3
Not specified	18	1.9	2	3.1	1	1.5	21	1.9
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
Does not have tenure:								
But appealing*	55	19.2	341	26.8	18	10.9	414	24.0
Not appealing	40	14.0	180	14.1	21	12.7	241	14.0
Not specified	10	3.5	48	3.8	2	1.2	60	3.5
Total without tenure	105	36.7	569	44.7	41	24.8	715	41.5
Has tenure	179	62.6	686	53.8	121	73.4	986	57.1
Not specified	2	0.7	19	1.5	3	1.8	24	1.4
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

* Even though it required devoting a greater part of his time to departmental teaching and administration.

TABLE 103
SUMMARY OF THE TEACHING RESPONSIBILITIES REPORTED BY FACULTY MEMBERS

TEACHING RESPONSIBILITIES	DEPARTMENT			
	Clinical		Preclinical	
	N	%	N	%
Required to teach	891	83.4	1540	89.3
Responsible for formal lectures*	962	90.1	1633	94.7
In medical school courses	931	87.2	1527	88.5
In graduate school courses	259	24.3	927	53.7
Responsible for laboratory supervision*	466	43.6	1539	89.2
In medical school courses	409	38.3	1459	84.6
In graduate school courses	116	10.9	669	38.8
Has primary responsibility for organization and conduct of above courses	710	66.5	1213	70.3
Responsible for supervising graduate students†	366	34.3	991	57.4
Responsible for supervising postdoctoral fellows	366	34.3	395	22.9
Total	1068	100.0	1725	100.0

* Includes undergraduate and graduate courses, medical school, dental school, and other courses.

† Answers to this question revealed that some members of the clinical faculty defined residents as "graduate students." Where this was apparent, the response was not counted. However, it is possible that this definition was applied by others who did not make this clear by their comments. Accordingly, the interpretation of the answers to this question, particularly from the clinical departments, is debatable.

TABLE 104
FACULTY MEMBERS' ESTIMATES OF THE PROPORTION OF THEIR TIME DEVOTED TO RESEARCH, BY DEGREE

PROPORTION OF TIME IN RESEARCH	DEGREE							
	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Full time	44	4.7	44	67.7	7	10.4	95	8.9
More than half time	104	11.1	14	21.6	13	19.4	131	12.3
About half time	193	20.6	5	7.7	15	22.4	213	19.9
Less than half time	383	40.9	1	1.5	27	40.3	411	38.5
Very little time	195	20.9	1	1.5	5	7.5	201	18.8
None	17	1.8	....	....	....	....	17	1.6
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
Full time	18	6.2	92	7.2	6	3.6	116	6.7
More than half time	90	31.5	392	30.8	51	30.9	533	30.9
About half time	94	32.9	487	38.2	59	35.8	640	37.1
Less than half time	59	20.6	246	19.3	39	23.6	344	19.9
Very little time	24	8.4	50	3.9	10	6.1	84	4.9
None	1	0.3	5	0.4	....	....	6	0.4
Not specified	....	....	2	0.2	....	....	2	0.1
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

TABLE 105
FACULTY MEMBERS' ESTIMATES OF THE PROPORTION OF THEIR TIME DEVOTED
TO RESEARCH, BY RANK

PROPORTION OF TIME IN RESEARCH	FACULTY RANK									
	Chairman	Professor	Associate Professor	Assistant Professor	Instructor	Other*	Total			
	N	%	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>										
Full time	3	2.5	8	4.6	16	5.5	24	7.4	16	15.4
More than half time	1	0.8	15	8.6	38	13.2	52	16.0	20	19.2
About half time	7	5.9	35	20.0	67	23.2	82	25.2	15	14.4
Less than half time	71	59.7	80	45.7	116	40.1	110	33.8	28	26.9
Very little time	36	30.3	36	20.5	48	16.6	50	15.4	24	23.1
None	1	0.8	1	0.6	4	1.4	7	2.2	1	1.0
Total	119	100.0	175	100.0	289	100.0	325	100.0	104	100.0
									56	100.0
										1068
										100.0
<i>Preclinical Departments</i>										
Full time	1	0.3	4	1.6	13	3.0	31	6.0	9	6.6
More than half time	34	11.2	66	27.4	149	33.9	198	38.6	63	46.0
About half time	108	35.7	106	44.0	183	41.7	188	36.7	49	35.7
Less than half time	132	43.6	52	21.6	74	16.9	73	14.2	10	7.3
Very little time	24	7.9	11	4.6	18	4.1	23	4.5	6	4.4
None	3	1.0	2	0.8	1	0.2	....	....	....	....
Not specified	1	0.3	....	....	1	0.2	....	....	....	....
Total	303	100.0	241	100.0	439	100.0	513	100.0	137	100.0
									92	100.0
										1725
										100.0

* Includes lecturers, associates, and assistants.

TABLE 106
FACULTY MEMBERS' ESTIMATES OF THE PROPORTION OF THEIR TIME DEVOTED
TO RESEARCH, BY ACADEMIC TENURE

PROPORTION OF TIME IN RESEARCH	ACADEMIC TENURE					
	Has tenure		Does not have tenure		Not specified	
	N	%	N	%	N	%
<i>Clinical Departments</i>						
Full time	27	4.5	64	14.4	4	19.0
More than half time	52	8.7	79	17.7	....	....
About half time	112	18.6	97	21.7	4	19.0
Less than half time	269	44.8	134	30.0	8	38.1
Very little time	133	22.1	64	14.4	4	19.1
None	8	1.3	8	1.8	1	4.8
Total	601	100.0	446	100.0	21	100.0
<i>Preclinical Departments</i>						
Full time	12	1.2	100	14.0	4	16.7
More than half time	248	25.1	278	38.9	7	29.2
About half time	411	41.7	221	30.9	8	33.3
Less than half time	251	25.5	88	12.3	5	20.8
Very little time	56	5.7	28	3.9	....	....
None	6	0.6	....	....	....	....
Not specified	2	0.2	....	....	....	....
Total	986	100.0	715	100.0	24	100.0

TABLE 107
SATISFACTION OF FACULTY MEMBERS WITH THE DISTRIBUTION OF THEIR OWN TIME
AMONG VARIOUS ACADEMIC RESPONSIBILITIES, AND THEIR PREFERENCES FOR CHANGE

VIEWS ON DISTRIBUTION OF TIME	DEPARTMENT			
	Clinical		Preclinical	
	N	%	N	%
<i>Satisfaction with present distribution</i>				
Satisfied	587	54.9	1189	68.9
Not satisfied	429	40.2	473	27.4
Not specified	52	4.9	63	3.7
Total	1068	100.0	1725	100.0
<i>Preference for change</i>				
<i>Teaching</i>				
Increase	135	12.6	59	3.4
Decrease	67	6.3	250	14.5
Eliminate	1	0.1	5	0.3
Total desiring change	203	19.0	314	18.2
<i>Research</i>				
Increase	395	37.0	418	24.2
Decrease	5	0.5	8	0.5
Eliminate	2	0.2	2	0.1
Total desiring change	402	37.7	428	24.8
<i>Clinical service</i>				
Increase	61	5.7	21	1.2
Decrease	208	19.5	16	0.9
Eliminate	3	0.3	9	0.5
Total desiring change	272	25.5	46	2.6
<i>Administration</i>				
Increase	8	0.8	26	1.5
Decrease	247	23.1	217	12.6
Eliminate	35	3.3	30	1.7
Total desiring change	290	27.2	273	15.8

TABLE 108
SATISFACTION OF FACULTY MEMBERS WITH THE DISTRIBUTION OF THEIR OWN TIME,
BY DEGREE

DEGREE	Satisfied		Not satisfied		Not specified		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
M.D.	498	53.2	393	42.0	45	4.8	936	100.0
Ph.D.	48	73.8	13	20.0	4	6.2	65	100.0
Both	41	61.2	23	34.3	3	4.5	67	100.0
Total	587	54.9	429	40.2	52	4.9	1068	100.0
<i>Preclinical Departments</i>								
M.D.	193	67.5	79	27.6	14	4.9	286	100.0
Ph.D.	885	69.5	349	27.4	40	3.1	1274	100.0
Both	111	67.3	45	27.3	9	5.4	165	100.0
Total	1189	68.9	473	27.4	63	3.7	1725	100.0

TABLE 109
SATISFACTION OF FACULTY MEMBERS WITH THE DISTRIBUTION OF THEIR OWN TIME,
BY ACADEMIC RANK

ACADEMIC RANK	Satisfied		Not satisfied		Not specified		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Chairman and Professor	36	30.2	79	66.4	4	3.4	119	100.0
Professor	100	57.1	64	36.6	11	6.3	175	100.0
Associate Professor	159	55.0	118	40.8	12	4.2	289	100.0
Assistant Professor	190	58.5	116	35.7	19	5.8	325	100.0
Instructor	66	63.5	35	33.6	3	2.9	104	100.0
Other	36	64.3	17	30.3	3	5.4	56	100.0
Total	587	54.9	429	40.2	52	4.9	1068	100.0
<i>Preclinical Departments</i>								
Chairman and Professor	170	56.1	120	39.6	13	4.3	303	100.0
Professor	178	73.9	55	22.8	8	3.3	241	100.0
Associate Professor	311	70.8	114	26.0	14	3.2	439	100.0
Assistant Professor	346	67.5	149	29.0	18	3.5	513	100.0
Instructor	117	85.4	17	12.4	3	2.2	137	100.0
Other	67	72.8	18	19.6	7	7.6	92	100.0
Total	1189	68.9	473	27.4	63	3.7	1725	100.0

TABLE 110
OPINIONS OF FACULTY MEMBERS ON THE BALANCE OF ACADEMIC RESPONSIBILITIES
IN THEIR DEPARTMENTS AS A WHOLE, BY ACADEMIC RANK

ACADEMIC RANK	In balance		Not in balance		Not specified		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Chairman and Professor	67	56.3	49	41.2	3	2.5	119	100.0
Professor	116	66.3	48	27.4	11	6.3	175	100.0
Associate Professor	156	54.0	113	39.1	20	6.9	289	100.0
Assistant Professor	177	54.5	122	37.5	26	8.0	325	100.0
Instructor	58	55.8	35	33.6	11	10.6	104	100.0
Other	30	53.6	13	23.2	13	23.2	56	100.0
Total	604	56.5	380	35.6	84	7.9	1068	100.0
<i>Preclinical Departments</i>								
Chairman and Professor	240	79.2	45	14.9	18	5.9	303	100.0
Professor	180	74.7	42	17.4	19	7.9	241	100.0
Associate Professor	326	74.3	93	21.2	20	4.5	439	100.0
Assistant Professor	355	69.2	132	25.7	26	5.1	513	100.0
Instructor	103	75.2	27	19.7	7	5.1	137	100.0
Other	55	59.8	20	21.7	17	18.5	92	100.0
Total	1259	73.0	359	20.8	107	6.2	1725	100.0

TABLE 111
OPINIONS OF DEPARTMENTAL CHAIRMEN ON THE BALANCE BETWEEN TEACHING
AND RESEARCH IN THEIR DEPARTMENTS AS A WHOLE, BY DEPARTMENT

DEPARTMENT	Satisfied		Not satisfied		Qualified answer or not specified		Total	
	N	%	N	%	N	%	N	%
<i>Clinical</i>								
Medicine	29	43.3	33	49.2	5	7.5	67	100.0
Obstetrics and Gynecology	15	24.6	43	70.5	3	4.9	61	100.0
Pathology	22	30.5	48	66.7	2	2.8	72	100.0
Pediatrics	18	31.6	37	64.9	2	3.5	57	100.0
Psychiatry	11	21.1	38	73.1	3	5.8	52	100.0
Surgery	18	27.3	44	66.7	4	6.0	66	100.0
Total	113	30.1	243	64.8	19	5.1	375	100.0
<i>Preclinical</i>								
Anatomy	52	71.2	18	24.7	3	4.1	73	100.0
Biochemistry	52	70.3	19	25.7	3	4.0	74	100.0
Microbiology	39	57.4	23	33.8	6	8.8	68	100.0
Pharmacology	51	70.8	19	26.4	2	2.8	72	100.0
Physiology	49	70.0	16	22.9	5	7.1	70	100.0
	243		95		19		357	
Less duplications*	6		3		....		9	
Total	237	68.1	92	26.4	19	5.5	348	100.0

* Chairmen of combined departments of physiology and pharmacology.

NOTE: The data presented in this table were taken from the questionnaire sent to departmental chairmen in 1957.

TABLE 112
POSTDOCTORAL FELLOWSHIP EXPERIENCE OF FACULTY MEMBERS, BY DEGREE

FELLOWSHIP EXPERIENCE	M.D.		Ph.D.		Both		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Held fellowship for:								
< 1 year	4	0.4	1	1.6	....	....	5	0.5
1 year	176	18.8	11	16.9	17	25.4	204	19.1
2 years	148	15.8	6	9.2	12	17.9	166	15.5
3 years or more	97	10.4	4	6.2	10	14.9	111	10.4
Duration not specified	7	0.7	....	....	2	3.0	9	0.9
Total who have held fellowships	432	46.1	22	33.9	41	61.2	495	46.4
No fellowship experience	450	48.1	40	61.5	22	32.8	512	47.9
Experience not specified	54	5.8	3	4.6	4	6.0	61	5.7
Total	936	100.0	65	100.0	67	100.0	1068	100.0
<i>Preclinical Departments</i>								
Held fellowship for:								
< 1 year	2	0.7	15	1.2	2	1.2	19	1.1
1 year	45	15.7	182	14.3	27	16.4	254	14.7
2 years	56	19.6	133	10.4	19	11.5	208	12.1
3 years or more	37	12.9	81	6.4	17	10.3	135	7.8
Duration not specified	1	0.4	5	0.4	4	2.4	10	0.6
Total who have held fellowships	141	49.3	416	32.7	69	41.8	626	36.3
No fellowship experience	126	44.1	818	64.2	91	55.2	1035	60.0
Experience not specified	19	6.6	40	3.1	5	3.0	64	3.7
Total	286	100.0	1274	100.0	165	100.0	1725	100.0

TABLE 113 — POSTDOCTORAL FELLOWSHIP EXPERIENCE OF FACULTY MEMBERS, BY TIME DEVOTED TO RESEARCH

TIME DEVOTED TO RESEARCH	Held fellowship		FELLOWSHIP EXPERIENCE		Not specified		Total	
	N	%	N	%	N	%	N	%
<i>Clinical Departments</i>								
Full time	54	10.9	35	6.8	6	9.8	95	8.9
More than half time	78	15.8	47	9.2	6	9.8	131	12.3
About half time	129	26.1	79	15.4	5	8.2	213	19.9
Less than half time	178	35.9	205	40.0	28	45.9	411	38.5
Very little time	53	10.7	133	26.0	15	24.6	201	18.8
None	3	0.6	13	2.6	1	1.7	17	1.6
Total	495	100.0	512	100.0	61	100.0	1068	100.0
<i>Preclinical Departments</i>								
Full time	59	9.4	55	5.3	2	3.1	116	6.7
More than half time	245	39.1	271	26.2	17	26.6	533	30.9
About half time	217	34.7	401	38.7	22	34.4	640	37.1
Less than half time	86	13.7	240	23.2	18	28.1	344	19.9
Very little time	18	2.9	61	5.9	5	7.8	84	4.9
None	1	0.2	5	0.5	—	—	6	0.4
Not specified	—	—	2	0.2	—	—	2	0.1
Total	626	100.0	1035	100.0	64	100.0	1725	100.0

TABLE 114 — ROLE OF FACULTY MEMBERS IN THE SUPERVISION OF POSTDOCTORAL RESEARCH FELLOWS, BY ACADEMIC RANK

ACADEMIC RANK	Supervises fellows		Does not supervise fellows		Total	
	N	%	N	%	N	%
<i>Clinical Departments</i>						
Chairman and Professor	58	48.7	61	51.3	119	100.0
Professor	90	51.4	85	48.6	175	100.0
Associate Professor	112	38.8	177	61.2	289	100.0
Assistant Professor	85	26.2	240	73.8	325	100.0
Instructor	11	10.6	93	89.4	104	100.0
Other	10	17.9	46	82.1	56	100.0
Total	366	34.3	702	65.7	1068	100.0
<i>Preclinical Departments</i>						
Chairman and Professor	135	44.6	168	55.4	303	100.0
Professor	75	31.1	166	68.9	241	100.0
Associate Professor	98	22.3	341	77.7	439	100.0
Assistant Professor	68	13.3	445	86.7	513	100.0
Instructor	12	8.8	125	91.2	137	100.0
Other	7	7.6	85	92.4	92	100.0
Total	395	22.9	1330	77.1	1725	100.0

TABLE 115 — ROLE OF FACULTY MEMBERS IN THE SUPERVISION OF POSTDOCTORAL RESEARCH FELLOWS, BY SOURCE OF SALARY

SOURCE OF SALARY	Supervises fellows		Does not supervise fellows		Total	
	N	%	N	%	N	%
<i>Clinical Departments</i>						
Regular budget	276	37.9	452	62.1	728	100.0
Grants	36	26.1	102	73.9	138	100.0
Fellowships	16	29.1	39	70.9	55	100.0
Other	31	31.6	67	68.4	98	100.0
Not specified	7	14.3	42	85.7	49	100.0
Total	366	34.3	702	65.7	1068	100.0
<i>Preclinical Departments</i>						
Regular budget	339	23.8	1083	76.2	1422	100.0
Grants	23	14.6	134	85.4	157	100.0
Fellowships	23	31.5	50	68.5	73	100.0
Other	4	10.3	35	89.7	39	100.0
Not specified	6	17.6	28	82.4	34	100.0
Total	395	22.9	1330	77.1	1725	100.0

TABLE 116
SOURCE OF SALARY OF FACULTY MEMBERS, BY ACADEMIC RANK

ACADEMIC RANK	SOURCE OF SALARY				Total
	Regular budget	Grants	Fellowships	Other	
	N	N	N	N	N
	%	%	%	%	%
<i>Clinical Departments</i>					
Chairman and Professor	110	1	...	6	119
Professor	147	3	...	19	175
Associate Professor	222	25	2	27	289
Assistant Professor	195	60	4	27	325
Instructor	41	24	24	14	104
Other	13	25	8	5	56
Total	728	138	55	98	1068
<i>Preclinical Departments</i>					
Chairman and Professor	300	...	...	1	303
Professor	221	3	...	8	241
Associate Professor	395	16	5	6	439
Assistant Professor	408	45	12	13	513
Instructor	86	29	38	7	137
Other	12	64	10	4	92
Total	1422	157	73	39	1725

TABLE 117
SOURCE OF SALARY OF FACULTY MEMBERS, BY PARTICIPATION IN TEACHING ACTIVITIES

PARTICIPATION IN TEACHING ACTIVITIES	SOURCE OF SALARY				Total
	Regular budget	Grants	Fellowships	Other	
	N	N	N	N	N
	%	%	%	%	%
<i>Clinical Departments</i>					
Required to teach	654	87	35	82	891
Responsible for organization and conduct of courses	542	51	24	71	710
Supervises graduate students	264	37	15	28	366
Supervises postdoctoral fellows	276	36	16	31	366
Total*	728	138	55	98	1068
<i>Preclinical Departments</i>					
Required to teach	1357	73	57	30	1540
Responsible for organization and conduct of courses	1091	48	34	20	1213
Supervises graduate students	869	51	39	15	991
Supervises postdoctoral fellows	339	23	23	4	395
Total*	1422	157	73	39	1725

* Since these categories are not mutually exclusive, the sum of the frequencies is larger than the total number of individuals involved.

TABLE 119
SOURCE OF SALARY OF FACULTY MEMBERS,
BY PARTICIPATION IN RESEARCH AS PRINCIPAL INVESTIGATORS ON RESEARCH GRANTS

PARTICIPATION IN RESEARCH AS PRINCIPAL INVESTIGATOR	SOURCE OF SALARY					Total	
	Regular budget	Grants	Fellowships	Other	Not specified	N	%
<i>Clinical Departments</i>							
Principal investigator	504	82	36	61	30	713	66.7
Not principal investigator	221	56	19	37	18	351	32.9
Not specified	3	0.4	...	...	1	4	0.4
Total	728	138	55	98	49	1068	100.0
<i>Preclinical Departments</i>							
Principal investigator	1124	77	54	21	22	1298	75.2
Not principal investigator	294	79	19	18	12	422	24.5
Not specified	4	0.3	...	...	...	5	0.3
Total	1422	157	73	39	34	1725	100.0

TABLE 120
SOURCE OF SALARY OF FACULTY MEMBERS,
BY SATISFACTION WITH THE DISTRIBUTION OF THEIR OWN TIME

SATISFACTION WITH DISTRIBUTION OF TIME	SOURCE OF SALARY					Total	
	Regular budget	Grants	Fellowships	Other	Not specified	N	%
<i>Clinical Departments</i>							
Satisfied	382	91	42	42	30	587	54.9
Not satisfied	312	40	12	47	18	429	40.2
Not specified	34	7	1	9	1	52	4.9
Total	728	138	55	98	49	1068	100.0
<i>Preclinical Departments</i>							
Satisfied	957	123	56	28	25	1189	68.9
Not satisfied	414	26	15	9	9	473	27.4
Not specified	51	8	2	2	...	63	3.7
Total	1422	157	73	39	34	1725	100.0

TABLE 121
REPORTS OF DEPARTMENTAL CHAIRMEN ON REGULARLY BUDGETED POSITIONS
ON THEIR STAFFS FOR 1956-1957 THAT WERE NOT FILLED, BY DEPARTMENT

DEPARTMENT	NUMBER OF VACANCIES N	DEPARTMENTS REPORTING					
		One or more vacancies*		No vacancies*		Total	
		N	%	N	%	N	%
<i>Clinical</i>							
Medicine	34	20	29.9	47	70.1	67	100.0
Obstetrics and Gynecology	33	24	39.3	37	60.7	61	100.0
Pathology	57	29	40.3	43	59.7	72	100.0
Pediatrics	48	25	43.9	32	56.1	57	100.0
Psychiatry	48	20	38.5	32	61.5	52	100.0
Surgery	33	14	21.2	52	78.8	66	100.0
Total	253	132	35.2	243	64.8	375	100.0
<i>Preclinical</i>							
Anatomy	34	20	27.4	53	72.6	73	100.0
Biochemistry	24	16	21.6	58	78.4	74	100.0
Microbiology	19	14	20.6	54	79.4	68	100.0
Pharmacology	21	16	22.2	56	77.8	72	100.0
Physiology	36	23	32.9	47	67.1	70	100.0
	134	89		268		357	
Less duplications†	3	2		7		9	
Total	131	87	25.0	261	75.0	348	100.0

*That they wished to fill.

† Chairmen of combined departments of physiology and pharmacology.

TABLE 122
OPINIONS OF DEPARTMENTAL CHAIRMEN REGARDING FACTORS INFLUENCING SUITABLE
CANDIDATES AGAINST ACCEPTING APPOINTMENTS IN THEIR DEPARTMENTS

OBSTACLES TO EMPLOYING SUITABLE CANDIDATES	DEPARTMENT			
	Clinical		Preclinical	
	N	%	N	%
Salary	72	19.2	53	15.2
Competition with industry	10	2.7	40	11.5
Competition with government	28	7.5	40	11.5
Attraction of medical practice (for M.D.'s)	174	46.4	96	27.6
Attraction of opportunities in preclinical departments (for clinical people), and vice versa	25	6.7	77	22.1
Total departments reporting	375	100.0	348	100.0

NOTE: The data presented in Tables 121 and 122 were taken from the questionnaire sent to departmental chairmen in 1957.



